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THE EDINBURGH MEDICAL JOURNAL.

Part First.

ORIGINAL COMMUNICATIONS.

I.—ON A SELF-INFLICTED BULLET WOUND OF THE HEAD; EXTENSIVE INJURY TO SKULL AND BRAIN; RECOVERY.

By **Allen Thomson Sloan**, M.D., C.M.

(*Read before the Medico-Chirurgical Society of Edinburgh, 20th December* 1893.)

A. B. C., aged 38, foreman gunsmith, a highly intelligent, steady-living, exemplary man, had been suffering for some months, probably five or six, from mental depression, the result of over-work and anxiety, due to the long and painful illness of an only sister and the very sudden death of a brother who was living abroad. He first consulted me for his present illness in the beginning of the year, complaining chiefly of indigestion associated with constipation, which rendered him slightly irritable and not quite so able for his work. Some simple treatment was prescribed, which evidently had the effect of curing him, as he did not again call on me till March the 30th, when his general appearance and symptoms were such that I advised him immediately to give up his employment and take a trip to America. He complained of a rushing, oppressive feeling on the top of his head, and felt his work a perfect burden to him,—so much so, that he was afraid to awake in the morning for the thought of what lay before him that day. When away from his work, even for a day, these feelings were entirely removed, and he felt quite cheerful and like himself. Knowing his family history I urged him not to delay, but to take out his passage the following week; told him that nothing else but a complete change would be of any benefit; got his mother, who already had her fears aroused, to do all in her power to persuade him, but could only get his consent to go away to the country for a few weeks. This he did, with the result that whilst there he was apparently in perfect health, but the moment he resumed work there was the old complaint of the great feeling of oppression on the top of the head, and a general aspect of depression, which showed itself in his hanging head and altered, downcast gait as he walked through the streets. I saw him as a patient again on April 14th, and prescribed some acid tonic with liq. strychnine, advised him to get assistance in his business, and gave him 30 grs. of bromide of potassium to be taken at night to induce sleep. I met him accidentally about the beginning of June, and again finally pled with him to go abroad, but only with the effect of increasing his obstinacy, for he flatly informed me he would *not* go.

On Sunday morning, June 11th, about 8 A.M., two hurried messages arrived to go at once to the patient's house; and as the second of these indicated what had happened, I sent a messenger in a cab to Prof. Annandale, so that we arrived almost simultaneously. His mother, the only responsible person in the house, informed us that it was his usual custom to rise early on a Sunday morning and go over to his garden, and then return to breakfast. Being a little later than usual, she knocked at his door to inquire how he was, but was informed that he only wanted to be left alone. A minute or two after she heard a report, and entering the room found her son lying stretched out on bed with a smoking revolver in his hand, and a hole in his forehead, from which a tremendous amount of blood was rapidly flowing. With extraordinary presence of mind she removed the weapon and bound up the head with a pledget of cotton wool and a bandage, and sent first for a friend and then for medical assistance. Before this gentleman arrived, without any aid twice did the patient walk to the bath-room, lock the door, and attend to himself; and when the revolver was lifted, cried out to his friend, "For God's sake, man, be careful that no one is hurt, for it is loaded." The day previously he had been at his work as usual, had attended to the payment of the men under him, and on the afternoon went a drive into the country with some friends, when he seemed perfectly happy and in his ordinary health and spirits. In every one's opinion he was the last person in the world to associate with suicide; and except for a growing irritability in temper, was the sanest man in the world, with no delusions whatever other than that his work was too heavy for him.

We found him in a state of considerable collapse, hands and body cold, face deadly pale, pulse extremely slow, but of fair volume, and with, for the size of the bullet, a very large entrance wound exactly in the centre of the forehead. There was no visible blackening of the skin, singeing of hair, or burning of the edges of the wound with the powder. The scalp was torn quadrilaterally, and the edges, 1¼ inch long, inverted; and there was most extensive fracture and comminution of bone. Blood was also issuing from the mouth and nose, indicating some injury extending to the base of the brain, and altogether the case seemed a perfectly hopeless one. Nevertheless chloroform was administered, under which the patient struggled violently and moaned loudly, and Mr Annandale proceeded to remove the bullet. Six pieces of loose bone were removed with dressing forceps, and the interior of the brain was explored by the finger. What was thought to be a piece of bone, but was really the bullet, flattened like a button, was found lying on the cribriform plate of the ethmoid and removed, and a longitudinal fracture of the ethmoid discovered. One portion of the bone was blackened, and another piece, distinctly felt, could not easily be reached, and so was left, as it seemed useless to trouble the patient further. The wound was dusted with boracic and iodoform powder, a pad of salicylic wool, fixed by a light gauze bandage, put over it, and the very gravest prognosis given to the mother, whose natural prayer under the circumstances was for speedy death.

Soon after we left, without assistance the patient again walked to the bath-room, snibbed the door, attended to himself, and returned to his bedroom, only to fall on his bed and remain in a quiet, semi-comatose condition for the rest of the day. The remarkable thing about this action, after such rough handling and treatment of the brain, was, that it was no sudden impulsive act, but deliberate, and hardly explainable as a mechanical act capable of performance without thought or reasoning. In the afternoon he was removed to a large room and placed in bed, with the head, which felt very heavy, lying far round to the left side, from which position it never moved for *twenty-two* days, except when forcibly lifted for the better dressing of the forehead. The whole of that day the patient neither moved nor spoke, and was unable to swallow anything whatever, owing to the swelling of the tongue and stiffness of the jaws. In the evening the only difference observable was extensive brawny swelling of the muscles of the right side of the neck, and commencing ecchymosis of the surrounding scalp, face, and eyelids.

The following morning, June 12th, the patient presented a ghastly spectacle. The edges of the wound were everted and swollen, and, impelled by the pulsating brain behind, at least a teacupful of blood-clot was slowly extruded. The eyelids were deeply ecchymosed, the conjunctivæ injected and full of extravasated blood; the lower palpebral conjunctivæ to such an extent as to completely evert the lower lids. The corneal surface was full of hæmorrhages, so that the pupils were with difficulty seen, and found to react to the stimulus of light. There was deep black-blue discoloration of the skin of the face, extending right over the surface of the malar bones, and over the nose down to the angles of the mouth. The sterno-mastoid on the right side was tense, red, glistening, and swollen, with here and there extravasations under the skin. The lips could be opened with difficulty, and the tip of the tongue only protruded. A little iced milk could be slowly swallowed after insertion between the teeth with a teaspoon. By gentle palpation round the margins of the wound numerous crepitations could be produced by the rubbing together of the comminuted portions of bone. The patient was perfectly conscious, was able to make use of a urine-glass when necessary; tried, when asked, to put out the tongue; could move feebly right or left hand, or individual fingers of these, at will, as also right or left leg and toes; was sensitive to heat and pain, had no paralyses, and indicated that he had no violent pain of any kind, though he moaned loudly on any attempt being made to move the head, which hung heavily helpless towards the left side, as previously described. During the whole of that day the patient lay absolutely still, made no effort to make signs or speak, swallowed very slowly, and with great apparent pain and difficulty, very small pieces of ice or teaspoonfuls of iced milk, but was able to comprehend what was said to him, used the urine-glass after some delay at stated intervals, and altogether seemed quite unaffected as regards comprehension or intelligence. The pulse, which in the morning had risen to nearly the normal rate, was 82 per minute; and the temperature, which throughout the day had been slowly rising, was 100°·6. The urine, carefully tested, contained no sugar nor albumen, and was in every other respect perfectly normal. A male attendant was procured for him; and when with his assistance the dressing was removed at 9 P.M., the wadding was found to be thickly covered with pure brain substance, and at least a tablespoonful, both grey and white, unmixed with blood, oozed slowly from the wound, as if pushed gently out by the pulsating brain behind. The fixing of the bandage was by no means easy, as the patient was totally unable to raise his head, and groaned loudly when the slightest movement was attempted, and indicated that the greatest pain felt was in the muscles of the right side of the neck and behind the left ear, which lay in closest contact with the pillow.

From that date, for the next three weeks two-hourly observations were nightly made as regards temperature and pulse, and after the first week in regard to respirations, while similar observations were made each four hours through the day, and any alteration recorded in the temperature charts which I now produce.

On Tuesday, the 13th, at the morning dressing, at least another tablespoonful of brain matter was lost on the wadding, or was slowly extruded, while the temperature had continued gradually to rise to 102°·4, with corresponding quickening of pulse. An enema was administered, with the object of which the patient was fully conscious, and which without any difficulty he easily retained, and with the attendant's help was able to make use of the bed-pan for a very effectual and natural motion of the bowels.

The tongue could only be shown with great difficulty, was thickly furred, flabby, and swollen, but speech was comparatively easy, and the seat of the pain localized, and great complaints made as to our rough handling of his head. The chief pain complained of was in the whole head when it was actually raised, but most intense in the muscles of the right side of the neck, the skin over which looked angry, red, and glistening, the tension, owing to their strained position, being very great. Liquid nourishment, chiefly iced milk, was now much more freely taken, though the act of swallowing was slow, and attended with a considerable degree of actual pain.

At 4 P.M. the patient was again visited by Prof. Annandale, in whose presence the dressing was removed, with the same attendant loss of at least a dessert-spoonful of pure brain matter, a further quantity of which could easily be squeezed out by simple pressure on the numerous crepitating portions of comminuted bone, which formed a complete circle round the gaping wound in the scalp. He did not immediately recognise Mr Annandale, who was well known to him, but on being told who it was, immediately said, "Is that the Professor? I hope you are quite well, sir." I may mention that from the day following the accident till his removal, three weeks after, he not only perfectly recognised me, but could tell my coming up the stair, and at the different hours of visitation used to lie and listen for the sound of carriage-wheels or of footsteps on the street.

From the patient's appearance, the rising temperature, the great loss of pure brain substance, and the fact that examination of the bone removed had revealed that the longitudinal sinus had been opened into, our prognosis was still very hopeless, as we thought it hardly possible the patient could recover without secondary meningitis, cerebritis, or septicæmia. So much so was this my own opinion, that daily some indication of a fatal termination was looked for, until, from the patient's absolutely perfect understanding of all that was required of him in the way of making an effort to take nourishment and otherwise helping himself, there arose the possibility of a more favourable issue. In the evening, at 11 P.M., the temperature rose to 103°·8, but nevertheless the patient passed a quiet night, lying absolutely still, and only disturbed to be fed at intervals with iced milk, which he was able to sip very slowly from a drinking cup.

During the next twenty-four hours there was nothing special to note except a further loss of pure brain substance on the dressing, and a gradual but welcome fall in the temperature, which, however, on the evening of the 15th, the fifth after the accident, took a sudden rise to 104°·4, the highest degree reached during the whole course of the illness.

A powder containing 5 grs. each of calomel and rhubarb was given, and next morning the bowels acted very freely three times, the patient being fully able to indicate his wants to the attendant, and having absolutely complete control over his sphincters.

From the 15th to the 17th the temperature continued to fall; but on that day, in assisting to change his clothing, I observed a very marked and noticeable incident. In eight days, the patient, previously a well-nourished, healthy adult, had *wasted* to such an extent that it was thought advisable to put him on a water-bed; and on the lobe of the left ear, the one in constant contact with the pillow, a bed-sore ¾ of an inch in length had formed, and this in spite of its having been included in the dressing of wadding and gauze. This is only explainable on the grounds that some very marked "trophic" influence had been at work. Further, this, the eighth day of the accident, was an important one, as for the first time since the wound was inflicted the patient suddenly asked, "Had the bullet been extracted," though no notice was taken of his question; and he groaned loudly as the ear was dressed, saying, "there was a hole there where the bullet had come out." Previously not the slightest reference had been made as to the cause of the injury, and I am quite satisfied in my own mind that the patient himself had no exact idea, though I learned from the attendants that on the third day he had fancied he had been in some railway accident, and asked if any others had been injured.

In the evening the temperature rose to 103°, and next morning the respirations were noted to have become very shallow and rapid. With great difficulty the patient was raised and held in a sitting posture, one attendant specially holding the head, and extensive dulness of the base of the left lung was detected, with numerous crepitations all over it. Though the temperature kept high for the next four days, this condition was thought simply to be a hypostatic pneumonia, caused by the continued lying of the patient on the left side of the body.

During this week altogether at least four tablespoonfuls of pure brain matter had been expelled from the wound in the forehead, and a hole from an inch to an inch and a quarter deep was left, from which exuded from time to time a sero-sanguineous fluid. The uninjured brain was seen pulsating behind, the pulsations being conducted to the edges of the scalp wound, and affecting the loose comminuted portions of bone around it. There was no attempt at fungoid formation. The portions of destroyed brain having been expelled, granulations at once began to form and fill up the gap from within. The patient's general condition was much improved; the mouth could be opened with more freedom, and very light semi-solid nourishment taken; the eyes, though still much injected, were fast regaining their normal white, and the ecchymosis, fading gradually from blue to yellow, was slowly diminishing in extent. The muscles of the right side still remained tense, swollen, and painful, and it was absolutely impossible to turn the patient's head.

Mentally the condition was unchanged, though two noticeable incidents happened: first, a cousin arrived unexpectedly from abroad, and with him he had a sustained and perfectly intelligent conversation in regard to the route he had travelled, how he had left his friends, and what were his business prospects; while a few days after—the tenth of the accident—his brother, who had been cabled for unknown to him, walked into his room. Strangely, his visit seemed to occasion no surprise; no reason for his coming was asked, but all the usual inquiries about the health of himself and family and other social details were naturally and sensibly alluded to.

On this day, the 21st of June, the temperature fell to 99°, and two days afterwards, the 23rd, to normal, but the respirations continued very rapid, varying from 26 to 32 per minute, though by this time the lung condition was rapidly clearing up. For the next two days the patient was kindly visited by my friend Dr Thin, and on my return from the country no particular change was noted other than an increased tendency to restlessness through the night, a desire to talk too much and sometimes incoherently, and a troublesome inclination to pull the dressing off his head and ear.

During the next week, though nourishment of all kinds was freely taken, and the wound was progressing rapidly and favourably, the edges of the scalp quickly uniting, and the portions of bone welding together, the mental condition got distinctly worse. There was confusion of ideas as to time and place. The patient fancied he was not in his own house, and cried out loudly to be taken there; kept constantly calling his attendant "doctor," and pled with him to take him home; got excited when contradicted; and constantly mistook the morning for the afternoon, and night for day. Finally, he became so unmanageable that it was thought advisable to remove him to Ward VI. in the Royal Infirmary, which was done in the ambulance waggon on the morning of July 4th, exactly twenty-three days after the accident.

By this date the patient's physical condition had greatly improved; the mouth could be quite freely opened, and solids easily swallowed; the ecchymosis had almost entirely disappeared from face and scalp, but there was still marked injection, especially of the left eye, and discoloration of the eyelids. The wound was healthy, granulating, and filling up from below,—that in the scalp being almost three-parts healed. The most noticeable points in the patient's condition were the extreme emaciation, now rapidly improving, and the profound anæmia, due directly to the extreme loss of blood at the time of the injury. Some idea of the extent of this may be very roughly given by the mother's statement, that it took a woman washing one whole day to remove the stains from the floor, clothes, and bedding.

During his twenty-five days' residence in Ward VI. the patient's bodily condition continuously improved, but the mental condition became steadily worse; especially so after a second administration of chloroform a week after admission, on July 11th, on which day

Mr Annandale removed the loose portion of bone previously left, and after which the wound still more rapidly healed. On being visited, he used to invite me to dinner, fancied my hat was a bag containing his clothes, had delusions as to having been out a walk in the country, and became so unruly in interfering with his dressings that on various occasions his hands had to be strapped down. Still at intervals he was perfectly intelligent, knew where he was, talked sensibly to his brother, inquired about those at home, and, especially towards the end of the month, showed marked increased mental stability and improvement. The risk of his returning home was so great that it was thought wise to send him to an asylum, and he was removed as a private patient to Rosslynlee on the following certificates:—

LUNACY CERTIFICATES.

1. Facts indicating insanity observed by myself:—"Loss of memory concerning facts which have occurred within a short time of questioning; absurd answers to questions which have been put. Delusions concerning people and things spoken about. Violent attacks of mania, with desire to injure others."

2. Other facts (if any) indicating insanity communicated to me by others:—"Attempt to shoot himself" (Dr Sloan). "Thinking himself out walking when in bed" (Staff-nurse).

JAMES T. C. LAING,
July 28th, 1893. Royal Infirmary, Edinburgh.

1. Facts indicating insanity observed by myself:—"Imagining that he has been down to the shop, to Portobello, and other places, while he has been in the ward. Tearing the dressings from his head several times a day. Delusions regarding persons who have been to visit him. Great loss of memory. Perverted ideas as to the facts of his illness."

2. Other facts (if any) indicating insanity communicated to me by others:—"Delusions as to persons about him—thinking that they are entirely different persons" (Staff-nurse). "Singing 'Onward, Christian soldiers' times without number through the night" (Staff-nurse). "Thinking himself in a theatre" (Male Attendant).

D. C. BREMNER, M.B., C.M.,
July 28th, 1893. Canaan Lane, Edinburgh.

The next day, July 29th, the patient walked, practically without assistance, from Ward VI. to a cab at the east door of the Infirmary, and became during the drive to the Asylum absolutely and perfectly sane. So much so was his brother, who was accompanying him, struck with the change that he almost turned and took him home, and only with the greatest reluctance handed him over to the care of Dr Mitchell. From that day till now not the slightest symptom of insanity has been detected, and the patient has been absolutely without the faintest delusion of any kind whatever.

To Dr Mitchell I am indebted for the following report during his residence in the Asylum:—

"A. B. C.—Admitted to Midlothian and Peebles Asylum 29th July 1893; aged 38; single; gunmaker. No previous attacks. Came from Ward VI., Royal Infirmary, Edinburgh.

"*History.*—Hereditary predisposition is present, the patient's father having been melancholic."

As this is most important in connexion with the case I shall now detail it in full. Patient was born two years after his father's first discharge from the Asylum, and he unfortunately was again in confinement in a few months, when patient was actually *in utero.* His form of insanity was melancholia, with delusions that he could not work or make enough to keep himself and family. He often threatened to take his own life, and on one occasion was supposed to have actually attempted that of his daughter with a razor. A paternal cousin, a young man aged 25, died from an over-dose of chloroform self-administered; while a female cousin, also on the paternal side, died mysteriously in England, her death supposed to be due to poison taken by herself. His paternal grandfather died of cancer of the liver, an uncle on the same side of cancer of the root of the tongue, and his only sister of recurrent epithelioma of the upper jaw. This history tends to strengthen the idea of a possible relation between cancer and insanity. The father is still alive, is about 77 years of age, but in poor health. The mother, aged 74, is alive and well.

His first and the later mental and bodily symptoms have already been detailed in the history of the case.

"*State on Admission: Mental.*—The essential feature was mental depression,—simple depression without apparent delusion of any sort. There was also some confusion of ideas, and there was a slight degree of mental enfeeblement, and also of apathy. He sat still in a heavy, listless, dejected attitude, but would look up now and then at his questioner in a semi-suspicious manner when replying to questions. His tone of voice was very low. When asked how it was that he had desired to shoot himself, he gave rather incoherent replies, but said he did not NOW wish to kill himself. When asked to describe how he held the revolver with which he made the attempt on his life, he said at first he did not remember about it, but a few minutes afterwards he made an attempt to demonstrate how he held the weapon and fired, but the demonstration was given in a confused, uncertain, hesitating manner, as if he did not clearly recollect how it was done. His memory seemed fair,—namely, he gave his age and also the date correctly. Any of the above symptoms are explainable, in my opinion, by the weak and anæmic condition of the body, and also disappointment at learning that he was to be confined for some time, though his brother in the kindest way possible had explained matters to him in the drive out.

"*Bodily: Nervous System.*—Common sensation, special senses, motor and reflex systems seemed normal.

"*Alimentary System.*—Tongue furred; appetite poor. Bowels tending to be constipated.

"*Circulatory System.*—He was very anæmic (due to loss of blood). Pulse small and weak, 80; cardiac action rather weak; other systems seem normal. Temperature, 98° F.

"In the centre of the frontal bone is a deep depression, and a cicatrizing wound about ¾ of an inch in diameter over the depression.

"*Progress of Case: July 29th.*—Placed in No. 2 Male Ward.

"*July 30th.*—Is taking a fair amount of food, and sleeping pretty well.

"*August 5th.*—Has written a very connected letter to his employer. He seems a little more cheerful now than when admitted. Asks for books to read, saying he finds the life here rather monotonous.

"*August 12th.*—Visited by Dr Sloan and by friends. The visits seemed to have a very beneficial effect.

"*August 21st.*—Has been employed gardening for the last week, and he has improved very much in his bodily health. Seems to have made a lot of blood, and has got much stouter.

"*August 24th.*—Asked leave to go upstairs to the Asylum dance, and seemed to enjoy looking on. Did not dance the first evening, but did so on subsequent occasions.

"*September 24th.*—Has improved very much in his general health, having been out every day in the gardens for the last six weeks. He is smarter and quicker in his replies than he was at first, and he seems rather more cheerful on the whole; but it is noticed that he now seldom, if ever, looks his questioner in the face when replying, and his manner gives one the impression that he does not wish to enter into conversation.

"*October 20th.*—This morning, about 4 A.M., he seems to have had an epileptic fit. An intelligent patient who sleeps in the same room with Mr C. says that he leapt out of bed uttering a loud cry. When the attendant came into the room he found him in a state of muscular rigidity, and apparently in a state of tonic spasms. His bed was saturated with urine. When seen by reporter he was in his usual condition, and did not remember anything about having had an illness that morning.

"*October 23rd.*—Has been out for these two days past as usual. Has gained about a stone in weight since admission.

"*October 28th.*—Has remained very well indeed since last note. He looks, acts, and speaks like a sane man in all respects. He is now more cheerful than he has ever been since admission, and looks at his questioner much more readily than he has yet done. Was to-day discharged—*Recovered.*"

To further illustrate his very rapid return to complete mental health I shall read extracts from two letters received by me, and dated August 6th and 22nd respectively.

"*August 6th*, 1893.

"DEAR SIR,—When brought here my brother said that you would come out in a week to arrange for my getting home. Dr Mitchell has promised to let me go home with you. I shall be greatly obliged if you can come out soon, as I am wearying to get home again. I am comfortable here, but, of course, would prefer my freedom. I find myself gaining strength slowly, and my head is not so bad now, and I hope soon to be all right again."

It is to be noted that this letter was written within two months of the date of the accident (June 11th).

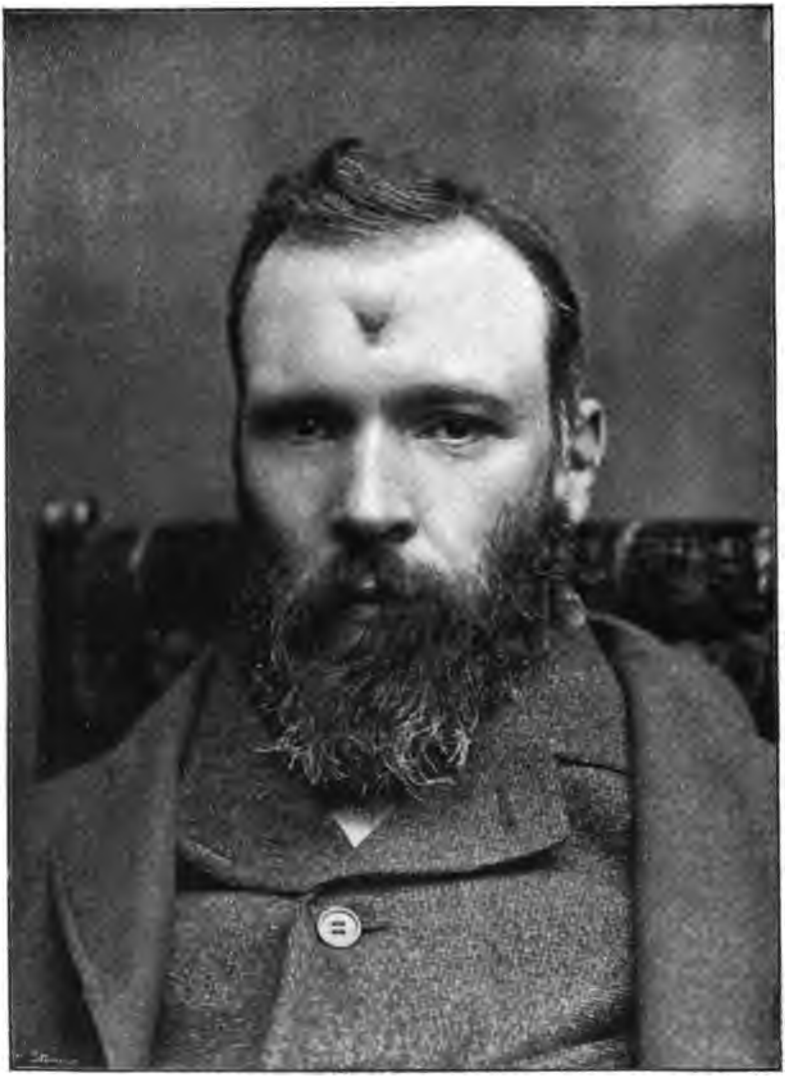
"*Rosslynlee Asylum*, 22/8/93.

"DEAR SIR,—I send you a few lines to let you know how I am keeping. I am glad to say that I am improving in health, and daily getting stronger. Dr Mitchell suggested to-day that I should write to you and see if you will agree to my leaving here. I would like to get away this week, and go to Callender 1st September, as I want to sail by the s.s. 'City of Rome,' on the 24th, for America. I am told that Dr Mitchell is going away his holidays very soon, and I would like very much to have this arranged before he leaves."

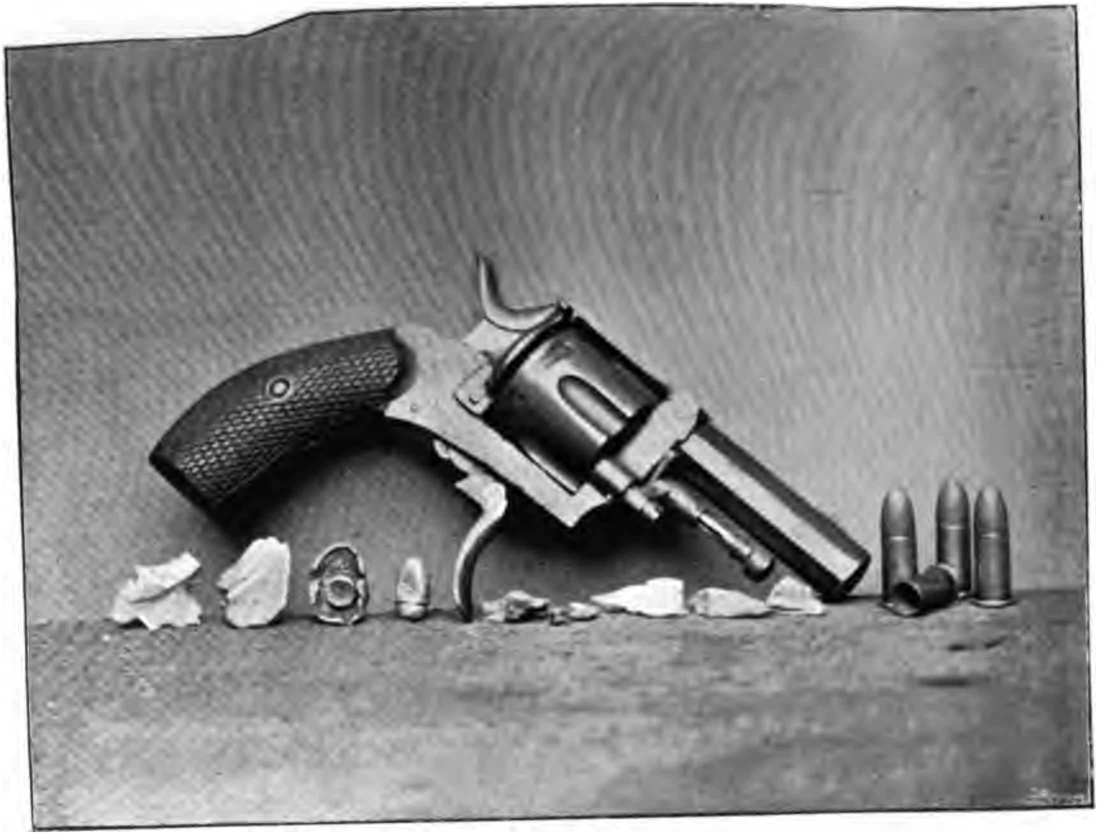
To me the most striking indication of return to perfect mental health was the extremely sensible and reasonable way he discussed this matter of residence in the Asylum; and when it was pointed out that complete recovery of mind was only consistent with improved bodily health, he at once consented to remain and complete the quarter. The marvellous improvement there made was undoubtedly largely due to his actually being constantly engaged in gardening work, of which recreation he was passionately fond.

October 29th.—The day after his discharge from the Asylum, after rather a sleepless night, owing to the excitement of his return home and a long conversation with his mother, who told him minutely about his illness and the various conversations he had had quite sensibly with several of his friends from abroad who had visited him, of all of which he had not the slightest recollection, he immediately resumed his old ways of spending a Sunday. Rising in the morning he went over to his garden, from which I saw him returning with fearless alert step with a large bouquet of chrysanthemums, and proceed direct to a chemist's, to whom he was personally known, to ask for plaster, the better to hide the hole in his forehead. After breakfast he suggested it was time for him to dress to go to church, where a communion service was to be held; but was dissuaded from carrying out this intention by the good sense of his mother, who explained to him that there would be many children and others present, who, out of curiosity and not understanding, might make him the object of unpleasant observation. Easily convinced, after dinner he visited the cemetery to lay some flowers on his sister's grave, and went a long country walk to visit his father, from whom all information as regards the accident had been kept. He had tea there, and called for me on his return home, at my usual evening consulting hour, between 6 and 7. His appearance was immensely improved since the last time I saw him,—his cheek ruddy and healthy, the eye bright and full of intelligence. In fact, he looked better and in more perfect health than he has done for the last eighteen months. I asked him how the interview with his father had passed off, and he replied, "Very well," the only thing he asked being, "What was that on his forehead?" to which the reply was, "Oh, nothing; simply a piece of sticking-plaster." When asked how he had slept the night previously, he said, "Not well; not till four in the morning," owing to the excitement of meeting his mother and the details he had heard of his illness, all remembrance of which was to him an absolute blank. From what I had been informed of his drive in from the Asylum, I was aware he had a complete recollection of what took place the day previous to the shooting, and thinking him sufficiently well, I pressed him hard to discover if the act was a momentary impulse or had been premeditated. As he remembered going a drive down to Cockenzie, I asked him as to his actions previously and subsequently to his return. He seemed to flush a little, but quite frankly told me that that afternoon he took the revolver, which was lying in the shop, with the express purpose of using it; that the fact of his being invited the drive simply postponed the act—which he thought, however, had occurred on the Monday morning—finally determined on at the mere thought of returning to work which he felt quite unable for. On his return from Cockenzie he went early to bed, and lay awake all night, his uppermost thought being that if he could not get rid of this pain and feeling of worry he would go out of his mind, and rather than suffer this he determined to shoot himself. Asked if during the night he had no thought of his mother or friends, he said "Yes," but the main idea was that of the continuous unpleasant sensations on the top of his head; and this he felt was the only possible means of putting an end to them. Further, he stated that on the Saturday it was deliberately he took the revolver,—the cartridges he had at home; that he was not in the habit of carrying such a weapon, and that no voices urged him, nor did any suggestion of any kind make such a desire enter his mind. As a fatal shooting case had occurred a few days previously, and had foolishly been fully reported in the papers, I inquired if his reading the report of it had been the means of making him think of it; but he at once stated he had neither heard nor read of it, and the only suggestion of means to employ lay in the fact that the weapons were constantly at hand in the way of business. He did not take the revolver to bed loaded, but it lay all night under his pillow, and it was only after having been spoken to by his mother that he suddenly rose and loaded it in two chambers, placed the muzzle in actual contact with his forehead, and fired. He said in doing so he was sitting on the edge of the bed, and must have fallen back when found by his mother. He distinctly recollects her cry at the report, but after that remembers nothing definitely till he wakened up in the Infirmary, though he has an indistinct recollection of being carried down stairs and conveyed away in a swinging bed in the ambulance waggon. Of his attendant Wilson, and of all other events,—such as being twice seen by Prof. Annandale and Dr Thin, of my frequent visits, the arrival of his cousin and brother from abroad, his perfectly connected inquiries about their friends and families, the route they had travelled, and the nature of their voyage,—he has absolutely no remembrance whatever. In Ward VI. he remembers occupying two different beds in opposite corners, but has no knowledge of being moved from one to the other; also the fact that his head was most frequently dressed by the nurse, and of his hands being strapped down by the male attendant Rae. He also states, which was perfectly correct, that on the latter going his holiday he was watched by a man Coutts, who treated him very kindly. Of Dr Gibson, who had charge of the ward, he has a perfect recollection, describing him as a tall, pleasant, clean-shaven gentleman, who used to nod and speak to him kindly, and with his close collar and manner exactly resembled a priest. He also was perfectly aware of at least four or five of my visits to him, and of his brother coming frequently there, and removing him to the Asylum, on which day his memory completely returned, and since then has been *absolutely perfect.* Of his residence in the Asylum he speaks warmly of the kindness of Dr Mitchell, but states he could never have been so well if he had been kept in the house and not allowed out constantly with the gardener, as the surroundings were depressing, and the other inmates not over-cheerful company. He told me about some of the patients: one especially, whose delusion was that another man was inside of him and couldn't come out, and also of a poor professional brother, whose delusion was that he had had no food for eighteen years, and whose language when being fed was very coarse,—both of which cases really exist. About his going abroad he suggested waiting to go with a certain steamboat which was due to sail in about three weeks, as his father and brother had travelled with it; but I advised him strongly to go out at once and get clear away from all the old associations and surroundings; so he left me, intending to go to the shipping office the next forenoon, with the promise to call in and tell me if he had secured a berth. After conducting some banking business, in this he was successful, made every arrangement himself, and booked his own passage for the following Saturday. During the week he called on all his old friends, not forgetting the sick; re-visited his old shopmates, from whom and his master he received a handsome presentation; went to the Infirmary to thank the attendants for their kindness to him; and in every way acted in the thoughtful, kindly way he had been always accustomed to. The only fact that I could not really explain to my own mind was that he had apparently no sense of shame at his position, no hesitation in speaking about his case or his Asylum experiences, and did not feel the least embarrassed when asked by me if he would object to get his forehead photographed, or come and see Dr Littlejohn, who kindly showed great interest in the case. I explained to him that with the exception of the American crowbar case his was probably unique, and that I would like to publish it, to which he made no objection; and further stated he knew all about that case, as he had read an account of it in the March number of *Harper* for 1885. The next day he went out to the Asylum to say good-bye, and brought me in the actual number referred to. So absolutely indifferent was he, that after much thought I am inclined to believe that, though apparently a symptom of a brain not quite sane, this total absence of sensitiveness is really a merciful indication of the completeness of the cure. The wound in the forehead was carefully examined by Dr Littlejohn and Dr Herbert Littlejohn, and also the day before he sailed (Nov. 4th) by Dr Thin and myself. As is shown in the Photograph, it is almost exactly in the centre of the forehead, where there now is a deep hole covered by an irregularly triangular cicatrix, the right side fully an inch and a quarter in length, the left about a quarter of an inch shorter. The bony deficiency is not well represented, for by union of the comminuted portions of bone a raised rim was formed round the depression, the whole being exactly covered by a crown-piece. The granulations must be very firm and fibrous, for, though partly protected by the narrowing of the bony canal at the inner table, the firmest pressure produced no symptoms whatever other than slight pain in the cicatrix. The patient also has a scar on the lobe of the left ear, produced by the bed-sore previously referred to, and indicating from its shape some actual loss of tissue. With the exception of marked diminution of the sense of smell, in every other respect—special senses, appearance, general health, and intelligence—patient is absolutely and perfectly well. He has no pain of any kind in any part of his head; there was no visible conducted pulsation except on the last occasion when he called to say good-bye, when he had walked quickly to my house and was much excited; and he himself expressed the opinion that all inclination for self-destruction had entirely disappeared, and that he was looking forward to a useful life across the sea.

The following letter, dated December 7th, six months almost to a day from the date of the injury, will further illustrate the completeness of the cure.



Dr A. T. Sloan's Case of Bullet Wound of the Head.



Dr A. T. Sloan's Case of Bullet Wound of the Head.

"*Georgia, U.S.*

"DEAR SIR,—I promised to write and let you know what kind of a voyage I had here, and should have done so before this time, but have put off till now. We had a fairly good voyage out. It was rough a little for some days, but not very bad. I was sick a little for four days, but after that was all right. We took ten days to cross the Atlantic, which is the time usually taken by the 'Anchoria.' She is a slow but steady ship, does not roll or pitch so much as some ships do. I did not stay long in New York, but took train for here, and came down by Washington, Philadelphia, Baltimore, and on down through Virginia and Tennessee into Atlanta, Georgia. From there by Columbus, M'Donnough, and Albany to Pelham, where my brother met me. I find this to be a pretty little town, or rather city they call it, but it is hardly worthy of the term city yet, but hope it will some day, as it is fast becoming a health resort for the wealthy Northerners to winter in. My brother has a fine large store in one of the best situations in town, and seems to be doing well, though every one is complaining of hard times,—cotton, which is the principal crop grown here, being very cheap at present, selling at less than it costs to make it. They have tried tobacco these last two years, but it is much too plentiful, and they cannot find a market for it. This is the land of flowers down here, roses and chrysanthemums in full bloom yet. The weather is quite cool now, barometer ranging from 70° during the day-time down to 30° during the night. I have stood the voyage and journey very well. My head does not give me any trouble, and I hope to keep right now."

My latest direct information was obtained no later than Sunday, the 17th December, in the form of an extract from an American paper, which I cannot refrain from quoting:—"Mr A. B. C., of Edinburgh, Scotland, arrived last night, and is the guest of Mr D. C., his brother. He will spend the winter here. Our readers will be glad to learn that Mr C. has almost entirely recovered from an accident which happened to him the first part of last summer, and which was at one time feared would result fatally. We trust his stay here will be both pleasant and beneficial."

The productions in the case are:—(1.) An ordinary six-chambered revolver, of Colt pattern, but inferior make. (2.) Seven pieces of fractured bone, removed by Prof. Annandale from the skull. (3.) Bullet flattened like a button and with inverted edges, removed from the brain. (4.) Empty discharged cartridge. (5.) Bullet weighing 80 grs., in cartridge containing 6 grs. of powder, of quality No. 4 Curtis & Harvey; diameter of bullet, ·320. (6.) Photographs.

The chemical composition of powder was—Saltpetre, 75 per cent.; charcoal, 15 per cent.; sulphur, 10 per cent.

Experiments were made on wood, sheet-iron, and paper.

The experiments on wood were made with a view to showing the penetrating power of the bullet. The same revolver and similar cartridges were used. Finely-seasoned pine-wood, in blocks of ½ inch, 1 inch, 1½ inches, 1¾ inches, 2 inches, and 3 inches thick, was chosen. Through each of these fired *direct*, with the muzzle of the revolver 1 inch from the surface, the bullet went right through. Fired obliquely from above and below, the same result was obtained. All showed marked blackening, and even engraining of the wood with the powder, and the entrance hole was very small. In the 3-inch experiment the bullet in one instance was arrested when placed against a background of hard wood, and this seems to be the explanation of its not actually penetrating the skull. Passing through and shattering the hard outer table of the frontal bone at the level of the frontal sinus, the bullet was arrested by the inner table, which it penetrated, and simply dropped down on the cribriform plate of the ethmoid by its own weight. The experiment on sheet-iron produced a deep indentation, and in comparing the bullet with that removed from the brain there was hardly a distinguishable difference. The paper experiment showed beautifully the singeing and scattering of the powder, many of the grains of which went right through. The paper used was absorbent paper, not unlike blotting-paper. The important point medico-legally is, that there was *no blackening* of skin with the powder, and this I explain by the fact that the muzzle was actually bored into the forehead, with the result that the scalp was torn before the powder explosion took place, and hence the blackening of bone and absence of superficial burning of the edges of the wound. All the frontal convolutions must have been more or less injured, and it is important to specially note the marked *trophic* change occurring within one week after the accident.

March 11th, 1894.—Patient is bodily and mentally in perfect health, but had two epileptic fits after a severe attack of influenza.

II.—CASE OF FIBROID TUMOUR TREATED BY ELECTRICITY.

By R. MILNE MURRAY, M.A., M.B., F.R.C.P.E., Lecturer on Midwifery and Diseases of Women, Edinburgh School of Medicine.

(*Read before the Obstetrical Society of Edinburgh*, 14*th March* 1894.)

THE following case seems to be of sufficient interest to justify my bringing it before the Society to-night:—

The patient, J. I., aged then 27, came to see me in September 1889. She is a native of Shetland, whence she had come some weeks previously. She was markedly anæmic, and suffered from slight conjunctivitis. Her periods had always been regular, but were recently scanty; and other anæmic symptoms, shortness of breath, etc., were prominent. Iron, arsenic, and some regulation of her diet put matters right in a few weeks, and I did not see her again until 20th August 1890. She had married in December 1889, and since then she had suffered considerable pain at her menstrual periods. The periods were now quite free, but not excessive; and were it not for the pain, she would have considered herself quite well at these times.

On examination I found the right ovarian region tender and fuller than normal, but nothing very definite could be made out. The cervix was small, conical, and very hard, and directed forward. Bi-manually the uterus was normal in size, but markedly anteflexed. Since her marriage she had suffered from occasional difficulty in retaining her urine, especially about the time of the periods.

On the 20th October she returned and said she had been normally unwell on the 5th, and again profusely on the 11th. On examination I found the right side somewhat more tender, but in front of the uterus there could be felt, bi-manually, a small hard tumour, apparently somewhat larger than a pigeon's egg, growing from the uterus near the fundus. This was evidently a small fibroid, and if it was there on my previous examination in August I had certainly overlooked it. I gave her some general directions, and asked her to come back in a month or two, but she did not return till 25th August 1891. Her periods for several months had been excessive and more frequent than normal, with much pain, especially after the discharge had almost ceased. About the third or fourth day a good many clots came away. She looked pale and anæmic, and had a rather pinched and anxious expression. On examination I found the cervix still very hard and pressed back towards the sacrum by a bulging mass approximately the size of a fist and of hard consistence. Bi-manually it was just above the level of the brim. It could be moved with difficulty, and not without a good deal of pain. The sound passed easily by tilting the handle well forward, and the whole mass of the fibroid seemed to lie in front of the canal. The sound entered 3½ inches.

She had great difficulty with her bladder; just before the periods she had to pass water every ten or fifteen minutes, and during the night was constantly disturbed.

I advised her to use a hot douche regularly, and to take frequent doses of ergot about the time of her periods, and for some months she seems to have got a certain amount of relief, but in March 1892 she came back saying she was worse than ever, and that she was sure the tumour was growing. A cursory examination was sufficient to prove she was right in this particular. The upper limit of the tumour was now half way between the pubis and umbilicus. Moreover, it had bulged down into the vagina, diminishing the length of the canal by about one-half. Her bladder and rectum were much impeded by the mass, and she was experiencing great difficulty in locomotion, from the pain in her back and legs.

I advised her to undergo a course of electrical treatment, but her husband declined to have his wife "experimented upon," as he put it; and when I explained that the only alternative seemed to be an operation, she herself refused to entertain that idea. As any attempt to push the tumour out of the pelvis was accompanied by great pain, there seemed to be nothing to be done but to continue the hot water and increase the ergot.

Of the latter she now began to take 20-30 minims three times a day, for periods as long as the stomach would tolerate that amount. She continued this and the hot water till October 1892. In spite of this the hæmorrhage increased at the periods and at other times as well, and she became seriously prostrated from loss of blood. Since July she had not ventured out, as the pain was intolerable when she attempted to walk; and, indeed, the greater part of the day was spent in bed. The mass was now as high as the umbilicus, and presented a marked prominence. She judged from her clothes that it was growing more in an antero-posterior than a vertical direction. It was rather higher and a good deal more prominent than a six-months' pregnancy.

The sound was passed with some difficulty, the canal being sharply turned to the left about 1¾ inch from the os. It passed in 3¾ inches. The condition of the patient was now very miserable, and she and her husband were only too glad to adopt any suggestion. I was still of opinion that electrical treatment gave her the best chance, but the difficulty was how to get her to my rooms. However, on the 11th November she was brought there, having been carried into the cab by her husband, and the first application was made. She bore 100 M. A. (positive intra-uterine) with some difficulty. The applications were repeated on the 15th, 22nd, and 30th November, the patient each time coming and going in a cab. From the first she declared that the pains were less, and that after the third application she could move about her room with a freedom she had not felt for months. To my surprise, on the 2nd December I overtook her in Rutland Street walking from the tram car at the west end of Princes Street. She felt so well that she had come in the car, and was walking to my rooms in Rutland Square. On examination I could detect absolutely no difference in the size of the tumour, but it was much less tender on pressure from the vagina,—indeed, one felt that it could have been pushed right out of the pelvis. It is quite likely that this marked relief from pain was due to the resolution of some inflammatory adhesion or exudation round the mass. At any rate, it could not be due to the diminution to any extent of the tumour itself. The period had begun the day before, but I made the application as usual, and the period had quite ceased by the 6th. She came again on the 8th, and continued coming twice a week until the 3rd February, getting eighteen applications in all. The period appeared on the 2nd January and on the 5th February, on both occasions being quite normal in amount and duration.

She had one application on the 29th March, as she had felt some pain, which, however, readily disappeared. The tumour was less prominent both in the abdomen and in the vagina, but not so to any marked extent. She had all the appearance when dressed of a woman six or seven months pregnant, but she said she felt quite comfortable, could move about with perfect freedom, and the bladder and rectum were acting normally. In March, April, May, and June her condition remained the same, the periods being perfectly regular. In the end of June she came to me asking if nothing could be done to get rid of the tumour. She professed herself willing to submit to any operation in order to get rid of it. I advised her strongly to rest content. She had, however, she told me, been reading about electrical treatment, and she had heard of a case where the tumour went away, and would I not go on with the treatment? I explained to her that the attempt might do more harm than good; but if she was anxious to try it, and willing to run the risks of having the periods made worse for a time, we might continue it.

On the 4th July I began the applications with the negative pole inside the uterus. She bore the pain badly, but persevered till on the 21st the period began, and on the third day the hæmorrhage was tremendous,—worse, she said, than it had ever been. She had had six intra-uterine applications. On the 25th I recommenced the positive intra-uterine application. I was struck on that day by two things:—

1. The considerable recession of the tumour in the vaginal roof.
2. The ease with which the sound entered. It was also noticed that the "rubberine" electrode lay flatter on the abdomen than usual.

She had three more positive intra-uterine applications in August, and the next period came on on the 25th, and was quite normal. She came back on the 20th October, and the whole mass of the tumour seemed distinctly smaller and much more movable.

From the 27th October to the 15th December she had twelve negative intra-uterine applications, always complaining of the pain they gave her internally, the pain continuing most of the night. But the tumour was evidently shrinking, and on the 15th December the sound passed just over 3 inches, and the base of the tumour was two finger-breadths below the umbilicus.

Various circumstances prevented the treatment being continued after this, and on the 27th January of this year she sent for me. I found her suffering from a sharp attack of gastric catarrh, apparently following a chill.

To my surprise I could not feel the tumour externally at all, and two days after, on vaginal examination, the following was the state of affairs:—The uterus lay to the right side, somewhat fixed by a short broad ligament. Bi-manually it felt like an enlarged anteflexed uterus about the second month of pregnancy, but, of course, much harder. The sound entered 2¾ inches, and nothing of the nature of a defined tumour could be felt. On bi-manual examination with the sound *in utero* the anterior wall was felt considerably thickened, but there was no marked prominence either in front or laterally.

She has recommenced the treatment, as there seems no reason to doubt that the remaining thickening will in due course disappear.

I need hardly say that were cases like this at all common the electrical treatment of fibroid tumours would not rest under the cloud which it does in the minds of the majority of gynæcologists. But rare as such an experience may be, it is charged with suggestions of some value, of which I should like to say a word.

No doubt the first questions which will arise in the minds of many will be, "How do you account for this?" and "Why should such a change occur in the case of one and fail in the case of so many?" To the first I must answer, "We cannot tell." In our therapeutic uses of electricity we are mainly groping. What guides we have are chiefly empiric.

Thus we know that in the vast majority of uteri bleeding from a fibroid in their walls, the application of a positive electrode carrying a current of sufficient strength a certain number of times will stop the hæmorrhage in a way that no other application will. As to how it acts we have no definite knowledge, but neither have we any as to how thyroid extract cures myxœdema; yet that is no reason why we should not continue to give thyroid extract in the one case and apply electricity in the other.

If we taboo all treatment of disease which is not based on "rational therapeutics," we shall sadly cut down the resources of the physician. To say that mercury is anti-syphilitic and salicylates anti-rheumatic, does not take us far in explaining their action, but we are thankful for their action all the same. Yet among the arguments employed by those who do not use electricity in gynæcology against those who do, is that the latter cannot give a rational explanation of the results they claim. My position is, I am thankful for the result now, and content to take the explanation afterwards.

As to the second question, Why should such a result be so rare? I would venture to draw attention to two points:—

First, The mass of the tumour was in front of the uterus, and was thus traversed by the whole current when the pad was placed on the abdomen; and

Second, The treatment was continued much longer than most patients will submit to. Forty-one applications in all, extending over a period of a year, have been made in this case.

Most patients are content with relief of the symptoms of hæmorrhage and pain, which usually occurs early; and if there is no marked shrinking of the tumour after fifteen or twenty applications, they become discouraged. Probably with more patience and perseverance we should get a more frequent return.

Leaving, however, all theoretical considerations at present, two points of practical interest in the case recorded may safely be emphasized:—

1. By means of electrical treatment symptoms of pressing urgency, which had resisted the ordinary measures of treatment, were speedily relieved.

2. In a woman of 32 a fibroid, as large or larger than a six months' pregnancy, practically disappeared after forty applications of electricity.

And with these facts before me, my faith in the ultimate recognition of electricity as a therapeutic agent in gynæcology remains unshaken.

III.—COLOUR AUDITION AND ITS RELATION TO THE VOICE.

By George E. Thorp.

During the last few years investigations in experimental psychology have brought into recognition Colour Audition. Its importance as an agent in the development of the voice is not affected by the uncertainty of its origin, or the speculation as to whether it is another sense or a mere phenomenon. Its value is to be measured by its utility. Let us briefly notice its relation to, and connexion with tone, in order to determine in what respect it is chiefly useful as a guide in the development of the voice. There are people to whom sound, whether musical or unmusical, is only noise. They can detect a difference in the degree of intensity or in the volume of tone, but they have no appreciation of pitch or rhythm as the majority of people have. There are some,[1] however, in whom sound always excites the sensation of colour. I have found by experience that tone and colour are coalescent,—that is, they are produced simultaneously by the same agent, they are inseparable, and also have equal prominence. Therefore colour audition is not the mere *association* of the *idea* of colour with tone, but an actual sensation. Whether tone and colour coalesce because of a peculiarity of the auditory nerve, which, in certain cases, communicates both impressions to the sensorium, or because the sound waves act upon a *separate* set of nerves, we cannot say. The union is so complete that the slightest change in one is always attended by an equal change in the other. Many persons possess colour audition; but as I know of no musician who has it, I am obliged to make use of my own experience.

Singing, according to my earliest recollections, consisted of sounds which varied not only in pitch, but also in form and colour.

The words "how" and "while" show some of the extreme changes which occurred. When singing "how" the breath-element "h" was brownish-black; as soon as "o" became vocal the colour changed to grey, but the shade varied according to the intensity of the tone. In passing from "o" to "w" the colour changed rapidly from grey to blue, olive, brown, and finally to a dull black. When singing "while" the colours were, first, on "wh" a muddy black; second, on "i" light grey; third, on "l" light blue; and lastly, on "e" dark blue. It was these colours which first called my attention to the fact that each sound had a definite form.

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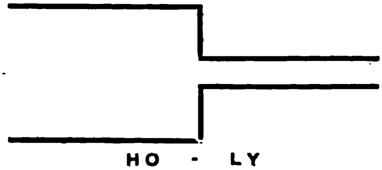
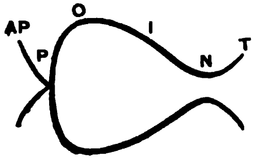
[1] W. S. Coleman, M.D., in the *Lancet* of March 31st, 1894, says, "The phenomena of colour hearing are experienced only by exceptional individuals, the most liberal estimate being 12 per cent."

For example, the word "holy," when sung to crotchets at the rate of 100 per minute, had this form:—

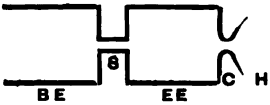


When taken more quickly the parts were shorter, and when sung slowly they were longer. In each case the length of the parts depended upon the time given to the syllable. The quality of "ho" was sombre and hollow, while "ly" was bright and intense. In colour "ho" was dark brown, "ly" light grey. The form of this word is not interrupted by consonants,[1] or varied by diphthongs, as is frequently the case; for example, in the words "appoint" and "beseech." "Appoint" has this form:—



The "a" sound is interrupted by the stopped consonant "p," and the open sound of "o" is varied by the closed sound of "i." The puff of "t" terminates the figure.

The word "beseech" has this form:—



The closed "e" forms are divided by the hissing breath-element "c," and the form ends with the open puff of the breath-element "ch." The colour of these forms varies with different people, according to the quality of the tone which they produce.

These various forms and colours, which during childhood amused me, in time became an annoyance. The training received for professional life did not correct the changes in form or the fantastic jumping about of the colours, which were not only different on every degree of the scale, but also on the same tone when words were sung. All sentiment in singing was on this account destroyed; and, finally, I decided to give up both singing and teaching, and, if possible, clear up the colour mystery.

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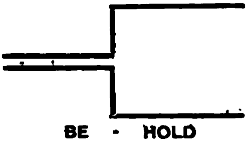
[1] The letter "l," though a consonant, did not interrupt the tone.

After studying some months I first noticed that it was the slight movements of the base of the tongue, when singing the scale, which produced these changes in quality, colour, and form of the tone. Moreover, certain movements of the tongue had the effect of projecting the tones from the mouth, while others seemed to detain them in the throat and impart to them a peculiar throaty quality. In singing words the tongue moved from base to tip, and on this account the same words sometimes had several colours, qualities, and forms.

Thus in "holy" the "ho" used to be hollow in sound and dark brown in colour; but now, when the tone is more intense, the colour is red. The law governing change of colour I have observed to be the same as for change in quality, viz., the change depends upon the number, order, and relative loudness of the upper partials in the tone.

Colour audition is not a universal gift, but these sound-forms are common to all who can distinguish between musical sounds; and if they have not been noticed by every one, it is because the sensations produced by tone have not been fully analyzed. I have recently asked several people whose attention had never been called to this subject to sketch the form which the word "behold" had when sung, and this was the result with but slight modifications:—



On account of such changes as these, sentences as well as words were unsymmetrical in sound-form, and the varieties of colour and quality were strongly marked. In my efforts to preserve a uniform colour when singing, these alterations became less frequent, until both colour and form remained nearly unaltered throughout an entire sentence. This result was obtained at first upon one tone, but in a short time I succeeded in maintaining the same colour, quality, and form over a considerable compass of the voice. I now find that it is possible to maintain it through all voices, from lowest bass to highest soprano.

While engaged in this work in Leipzig I met Prof. Gruber, who made use of my early experiences, and embodied them in a Report which he had been appointed to read before the Congress of Experimental Psychology in London, July 1892. Referring to my experiences in Form and Colour Audition, in contrast to those of another person, he said:—"Nous avons rencontré à Leipzig un Américain de Hartford, de l'état de Connecticut, très bien doué lui aussi, mais dont les chromatismes étaient tout à fait différents. Pour lui les *a* de la langue Anglais sont des rectangles de différente longeur, les *o* sont des surfaces affectant des formes rondes de différente grandeur, les chromatismes de *i* et *y* sont des surfaces triangulaires, etc. Pour lui, la loi de l'audition colorée est celle-ci; la forme et la grandeur des chromatismes est en rapport avec la grandeur de la voix parlée."

And in reference to its practical application he continues:—"Enfin nous pouvons citer le cas de notre sujet Américain de Leipzig, qui poursuit des études de chant dans cette ville. C'est un baryton distingué, d'une belle voix sonore et sympathique. Pour distinguer les nuances les plus fines de sa voix, il a recours à ses chromatismes. Il est très content de ce moyen que nous lui avons fait connaître. Il disait avoir trouvé maintenant son meilleur professeur."

In the discussion on Prof. Gruber's report, Mr F. Galston, F.R.S., said,—"He was extremely glad that the study of 'colour audition' had been carried on with so much energy by Prof. Gruber, whose attempts at measuring the size and shape of the coloured patches seen by a person who perceived them with much clearness, and who entered with zeal into the experiment, were very ingenious. They appeared to admit of being pursued with all desirable exactness. The frequency of colour audition was considerable among young persons, and it persisted not unfrequently throughout life. He had little or nothing of importance to add to what he had already published in *Human Faculty*, though new instances of this peculiar association had frequently been communicated to him since that book appeared. He might mention that he had recently seen a paragraph in the Life (by Eber) of the late Dr Lepsius, the Egyptologist, from which it appeared that Lepsius connected colour with sounds, and used those colours as a guide in his philological inquiries. He might add that he had the pleasure of seeing present that day a lady in whose family colour audition was hereditary, and who had given him much precise and interesting information relative to that phenomenon. Her case was one in which the general tendency was clearly hereditary, but not the details; thus one member of the family might say that the word was blue, and another strongly dissent and say it was green, and some little domestic friction occasionally arose in consequence."

The "coloured patches" here mentioned are the sound-waves broken by the language. These waves, heard by a dozen persons possessing colour audition, might excite a sensation of different colour in each. This would simply establish a different point of departure from which the development is the same.

The possessor of colour audition has the colour property of tone always at hand for comparison. If his most perfect tone be red, he approaches that colour as closely as possible on any pitch within his compass, and with all combinations of vowels and consonants. He has a model as definite as the material objects about him. The action of the external objects upon his eye which excites in the sensorium the sensation called colour, and the action of the sound-waves in his ear which excites the sensation called colour audition, are identical. To me colour audition is an absolute guide in obtaining the desired quality of tone, and, in time, I believe it will be recognised as such in all who possess it, just as absolute pitch is a fact which no one thinks of questioning.

IV.—STATISTICS OF THE BLIND IN SCOTLAND, AS SHOWN BY THE CENSUS RETURNS FOR 1891.

By WILLIAM GEORGE SYM, M.D., F.R.C.S.E.

SOME interesting information in regard to the ages, occupations, positions in life, etc., of the blind is to be found in the recently (1893) published portion of the Census Returns (Scotland) for 1891, the portion, namely, which deals with physical defects, etc. In regard to the physical defect, however, with which this article is concerned,—viz., want of sight,—one is met at the threshold of an investigation of these columns in the blue-book which refers to this matter, by the reflection that as there is no real standard of blindness there must be some irregularity in the numbers. No one, of course, is technically blind who is able to perceive even so little as the difference between Stygian darkness and bright sunshine, but the number of such persons is very small indeed, for it must be remembered that only a very few diseases of the eye are capable of reducing the visual perception to absolute zero. We must suppose, then, that those persons classed as "blind" have their visual power so reduced that their former occupations have become impossible to them, or that from defect in childhood they have not been able to undertake the tasks of life as others have. Doubtless this was the view which presented itself to the British householder as he solemnly spread out the census paper on the table before him preparatory to filling it up, and he was practically, though not perhaps theoretically, correct. For the chief object of introducing this column into the schedule is that we may know what numbers of persons are debarred from the usual industrial and other pursuits by this affliction. It must also be borne in mind that among the wealthier members of the community there must be some whose sight is so defective that they would, had they been born in another sphere of life, have been entered as "blind," but yet as they possess enough sight to enable them to walk about, to dress and care for themselves, they do not figure in the list. And in the same way many a child of humble origin will be called "blind," whose parents would have shrunk from giving so abrupt a name to his defective state of sight had they been able to provide for him specially of themselves.

The total number of persons thus scheduled as blind is 2797,—consisting of 1417 males and 1380 females. Since the total population amounts to 4,025,647, of whom 1,942,717 are males, and 2,082,930 are females, we see that the proportion is one blind person in every 1439, or one blind male in every 1371, the proportion of blind females being, as might be expected, smaller, viz., 1 in every 1509. This is readily accounted for to some extent by the greater exposure of men to risks of accident and disease; but we shall revert to this point later.

Unfortunately the occupations of these blind persons are not to be made out from the returns exactly, for all that is asked for in the papers is "Present or former occupation," therefore there is no advantage to be gained from *too* close an examination into the uncertain information under this heading, but some facts we observe which are instructive. In regard to mode of life the population is grouped by the authorities under six heads, which we note below, along with the number of blind persons in each group.

I. The Professional Class	contains	124	blind pers.,	consisting of	98 m.	& 26 f.
II. The Domestic Class	„	33	„	„	3	30
III. The Commercial Class	„	33	„	„	32	1
IV. The Agricultural Class	„	84	„	„	67	17
V. The Industrial Class	„	622	„	„	475	147
VI. The Unoccupied and Unproductive Class	„	1901	„	„	742	1159

Into the details of the groups into which each of these six classes is divided and subdivided it is not necessary to enter; I may, however, be allowed to direct attention to some particulars.

Of those in Class I. the majority are either students or engaged in teaching; in the list there is no medical practitioner. Classes II., III., and IV. do not call for much comment, except, perhaps, that in the last-mentioned there are 44 blind persons returned as farmers or graziers, and that there are also in the same class 4 fishermen. (One whose mind is not bound with red tape has a little difficulty in seeing why these fish should be taken out of the water and placed in an agricultural class, unless because the men are engaged in "ploughing the deep," and in gathering the "harvest of the sea.") Under the head of Class V. come, of course, a large number of persons engaged in what have been called the "blind trades,"—mat and chair making, basket working, and so on. It is of importance to note that there are only 10 miners entered as blind, considering the large number of men engaged in this occupation, and considering its dangerous nature as regards not merely accident, but liability to bring about the special disease of "miner's nystagmus." One is often asked whether it would be dangerous for a lad to become a watchmaker, lest his sight should be injured;

it is encouraging to note that there is no blind watchmaker. Nor are there any blind persons among those engaged in the manufacture of gunpowder or other explosive materials. Class VI. contains many persons, however, who have "retired from business," besides those "living on their own means," etc., and 110 male and 108 female scholars or children of no stated occupation.

In examining these returns in regard to other considerations, one cannot fail to be struck by one or two facts, some of which I may be allowed to point out here. The chief, most important, and most encouraging, is that the proportion of blind persons to population generally is decreasing. Let us compare the last Census with the present. In 1881 there were 3158 blind persons in a population of 3,735,573,—a proportion, namely, of 1 in 1182; whereas now, as we have pointed out, the proportion is 1 in 1439. The difference is very obvious when we calculate how many blind persons there would have been to-day had the proportion in the increased population of 1891 been what it was in 1881. We should have had among us, under these circumstances, not 2797, but 3406 blind persons, a difference of 609. This, it must be admitted, is a very substantial and encouraging change, and a very important increase in the productive power, and therefore in the wealth of the country, for these 609 persons are adding far more to the common wealth than they could have done had they been blind. There is little doubt that this gain is to a considerable extent to be accounted for by the greater care taken to prevent ophthalmia neonatorum, and the greater diffusion of the knowledge of its importance and of its proper and immediate treatment.

A second interesting observation is that the relative proportion of blind persons to population generally varies considerably in the different counties.[1] The proportion is highest in Shetland, Sutherland and Caithness, Inverness, Ross and Cromarty, and Argyll; lowest in Kincardine, Selkirk, Stirling, Linlithgow, and Berwick; and the differences are not slight, for, reduced to one scale, blindness is 10·5 times as common in the highest county (Shetland) as it is in the lowest (Kincardine). Even supposing that there are in our composite population racial differences which may show themselves in a greater or less liability to ocular diseases,—though I am not aware that this is so,—even supposing that to be true in a measure, it is at least a striking fact that blindness is far more common in those counties most remote from the sphere of operation of the oculist, and is least in those whose inhabitants are within easy reach of the larger towns. I think the much-reviled specialist may fairly indulge in a little self-gratulation in presence of these figures.

At all events, it must be the case that the large proportion in the remote counties must include numerous individuals who are now curable if only they could be brought to where skilled assistance could be given them,—*i.e.*, are "blind" from such diseased conditions as cataract (senile and infantile), and opacities of the cornea justifying optical iridectomy; and others also who, incurable now, were at one time capable of recovery,—cases such as of glaucoma and inflammatory affections of the eye. There is little doubt that this is true, even allowing for possible racial differences; and thus numerous persons appear in the blind column in the distant, who would not be found there in the home counties.

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[1] The presence of large blind asylums in Edinburgh and other towns necessarily alters the proportion in the respective counties to some extent.

The corollary from this is that the examining and licensing bodies have taken a wise step, and a step for which the country ought to be grateful, when they have insisted that their candidates shall have some knowledge of the diagnosis and treatment of diseases of the eye. For it is evident that the better the local practitioner is acquainted with the signs and treatment of the more important diseases of the eye, the less will be the disproportion between various parts of the country, the ratio of blind to population will fall even in the more remote districts; and the merest tyro in political economy can tell us that indirectly, if not actually directly, every blind man is to some extent a burden on the country.

When we compare the relative liability of males and females at various ages, we discover that, except before the age of five years, the number of blind males exceeds that of blind females up to the age of 60, after which period the proportions are reversed, there being 502 blind men above the age of 60, while there are 740 women under the same conditions. During the period of active industrial life, however, the blind men greatly exceed the women, there being 691 of the former and 453 of the latter, between the ages of 15 and 55. As we have already pointed out, the proportion of blind among the males is 1 in 1371, among the females it is 1 in 1509; this comes out even more clearly when one puts the matter in another form. Take 100,000 males and a similar number of females, there will be 73 blind among the former and 63 among the latter. Or thus, that although the population contains 107·22 females to every 100 males, there are only 91·04 *blind* females to 100 *blind* males. This difference—this greater liability of blindness on the part of males—is no doubt due largely to their greater exposure to disease and accident as compared with females; but, as was long ago pointed out, is partly also of different origins. For of the males living in 1891, 188 had been *born blind* or become so in childhood, while that was the case with only 171 of the females, showing that this is an inherent liability apart from occupation. Some of those thus blind from childhood have had long lives in spite of their being thus "handicapped," for three of them (women) are over 80 years of age, and one (a man) is over 85.

We may be allowed also to compare our Census returns with those of England and Wales for 1891 in the matter we have at present in hand, and when we do so we discover that in several particulars the results are different. The proportion of blind persons to population is, as has been mentioned, 1 in 1439 in Scotland, but 1 in 1236 in England; or 695 per 1,000,000 here to 809 there. When this is worked out it shows that had the proportion in our population been the same as it is in England, we should have had among us no fewer then 3257 blind persons instead of 2797, a difference of 460; and had their proportion been what ours is, they would only have had to provide for 20,157 blind persons instead of 23,467,—a difference of 3310. I believe that this will be found to depend very considerably on the much greater frequency of ophthalmia neonatorum in England, which is known to be the case; and this view is borne out by the fact that of *their* blind, one in every 6 has been so from childhood, while with *us* the proportion is one in 7·7.

The conclusions derivable from this examination of the Census returns are, I think, that good work has been done in the past in the way of reducing the evils produced by disease of the eye, but that there is much yet to be done. Disregarding for the meantime other and more important considerations, compulsory vaccination has been beneficial to the country to an extent far greater than one at first glance would perceive, by saving many eyes from complete or partial destruction by small-pox; and the obstetricians deserve the thanks of the community for the precautions they take to prevent the evils of ophthalmia neonatorum. We may look for further good also now that the rising generation of general practitioners is to be instructed in ophthalmology, for diseases destructive to sight will be recognised and treated in their early and curable stages. And the increased facilities of movement about the country, with the development of railways and other means of communication and locomotion, will tell in the same direction also, by enabling even the poor and the feeble to be brought nearer to timely help.

V.—PARTIAL ATROPHY OF THE DIAPHRAGM.

By John Tennant, M.A., M.B., C.M., Demonstrator of Anatomy, Queen's College, Belfast.

A body was dissected this winter in the anatomy rooms of Queen's College, Belfast, which presented such an unusual condition that Prof. Symington has advised me to put it on record.

The subject was that of a man, 60 years of age, 5 feet 5 inches in height, well nourished, and having no obvious deformity except a large inguinal hernia on each side. The right sac was empty when it was dissected, the left contained a loop of the sigmoid flexure of the colon, which was adherent to the bottom of it. The herniæ were not congenital.

The right vault of the diaphragm presented its usual appearance, and a hand introduced on the lower side of it could not be made to touch the thoracic wall higher than the fourth intercostal space. The anterior third, roughly speaking, of the left vault was in its usual place, and was marked off behind from the rest by a band extending from the tenth costal cartilage to the central tendon. This appearance of a delimiting band was caused by the condition of the posterior two-thirds of the vault. This part was quite lax and flabby, and was pushed up towards the neck in the form of a large pouch. The hand introduced from below into this pouch could easily be made to touch the second intercostal space. The pouch contained a large empty stomach and a number of distended coils of the transverse colon. The transverse colon was 55 inches long, and the greater part of it was coiled up in the left hypochondrium beneath the diaphragm. The left crus of the diaphragm did not appear altered in any way. When the chest was opened it was found that the left pleura was healthy, and the right had a good many bands of organized adhesions, which could quite readily be broken by the hand, and were chiefly at the back of the lung.

There was not much difference in size between the two lungs. The lower lobe of the left and upper of the right were both pneumonic, and there was some emphysema in places in both. The heart at its lower end reached 1½ inches to the left and 3 to the right of the median plaue. The base of the heart was practically normal in its position, and so was the attachment of the pericardium to the diaphragm, The situations of the reflexions of the pleuræ from the sternum and costal arches were normal, but their attachments to the front of the pericardium were displaced to the right; opposite the third intercostal space the left pleura reached it 2 inches to the right of the median plane.

The right half of the diaphragm, when removed, had its normal appearance, and so had the left half in its anterior segment—about a third part. The hinder part was very thin and translucent, and had only a few scattered muscular fibres, the remainder being membranous. The muscular fibres that remained did not appear to have undergone any alteration.

The left phrenic nerve was examined microscopically, but the sections obtained did not show any abnormality.

The clinical history of the patient does not throw much light on the condition. He had been treated at intervals for psoriasis in a hospital for several years, and was not recorded to have complained of any symptom referable to the state of his chest. He came in with croupous pneumonia, and died.

There were two tumours, which were probably gummata, deeply situated in the muscles of the left thigh. There were also some cicatrices of syphilitic appearance on the lower limbs. The only other morbid condition noticed was an old contraction of the mitral valve.

This condition would have been very difficult to detect during life, even if attention had been drawn to it by any symptoms of the patient. And even if it had been detected, the full diagnosis presents very great difficulties. There is nothing to support the view that it was caused by any morbid condition of the lungs or pleuræ. The chest was not contracted, the right lung had no chronic interstitial pneumonia, and the left was not collapsed. Besides, the atrophy of the muscular fibres of the diaphragm cannot be accounted for on these lines.

It is highly improbable that the cause lay in any morbid state of the spinal cord or its membranes, as this could hardly have occurred without involving other parts of the nervous system, and the meninges certainly showed no appearance of such a lesion. In addition, the histological examination of the left phrenic nerve, of which both longitudinal and transverse sections were taken, discountenances this view. The same argument may be applied against any peripheral lesion of the phrenic nerve in the neck or thorax; besides that, no local cause for such a lesion was seen. Unfortunately, the two phrenic nerves were not compared; but the left one was not markedly diminished in size and had no marked excess of fibrous tissue, although there was an unusual quantity of fat in the epineurium. So degeneration of the nerve may be excluded, unless in its peripheral terminations.

It may be borne in mind that the man was suffering from tertiary syphilis. It is possible that the lesion was situated in the peripheral terminations of the phrenic nerve, or was a primary muscular atrophy. The muscle showed no appearance of recent degeneration, and the atrophic part was not thicker, apparently, than the combined pleura and peritoneum with the connective tissue that normally underlies them in this situation. Further, if the disease originated in the diaphragm, one would expect some record of an illness corresponding to its early and acuter stage.

The only hypothesis that remains to be dealt with is that of a congenital imperfect differentiation of the diaphragm. Similar absences of the subclavian and other muscles, with substitution of fibrous tissue, have been recorded. The argument that one would more reasonably expect a hernia to be acquired before the abdominal cavity was thus extended into the thorax is not a very strong one. But on general grounds this does not recommend itself.

Nevertheless, one of two conclusions seems to be forced on us,—either that the disease was congenital, as indicated above; or that it was of the nature of a primary degeneration of the muscle or the nerve endings within it. In any case, the specimen is one of considerable pathological interest.

VI.—SELECTED CASES OF ASCITES IN WOMEN.

By JAMES OLIVER, M.D., F.R.S. (Edin.), Physician to the Hospital for Women, London.

1. *Ascites—Benign Tumours of both Ovaries—Peritoneum covering same thick, milk-white in appearance, and calcareous at spots.*

Sarah U., æt. 68, and married forty-two years, has never been pregnant. She ceased menstruating at the age of 40. For four or five years patient has remarked that the abdomen was gradually increasing in size. During this time she has complained more or less of a "feeling of weight," but never of pain in the abdomen. She is otherwise in good health, and has not lost flesh. The temperature is normal.

Physical Signs.—The abdomen is greatly distended. Centrally the percussion note is dull from the pubis to 2¾ inches above the umbilicus. In the nipple line the dulness on the right side extends from Poupart's ligament to 6½ inches above the umbilical level, whilst on the left side it extends to 2 inches above the umbilicus. Both flanks are dull, but this dulness varies with the position of the patient. Fluctuation is readily elicited. On the right side, when the ascitic fluid is suddenly displaced by dipping, the tips of the fingers impinge against a floating and hard body. In the left iliac and lumbar regions the abdominal swelling is more resistant than elsewhere.

Vaginal Examination.—The cervix, which is rather fleshy, is located towards the left wall of the pelvis. Posteriorly and on the left side the vaginal roof is puckered. Abdominal succussion leads to the belief that the hard floating body on the right side is ovarian, and that the more resistant portion of the abdominal swelling located in the left iliac and lumbar regions is the body of the uterus much enlarged.

Abdominal Exploration.—The abdominal cavity contained 2½ gallons of straw-coloured fluid. The omentum was firmly adherent to the anterior abdominal wall in the region of the left inguinal canal. The hard floating body on the right side was an irregular and almost solid ovarian tumour. The peritoneum covering this growth was pretty universally thickened, and presented a milk-white appearance here and there; depressed spots, at which apparently the peritoneum was slightly if at all affected, were detected. The thickened peritoneum was extensively infiltrated with lime salts. This tumour had contracted no adhesions, and it possessed a good pedicle. The resistant portion on the left side, which before operation was considered to be the body of the uterus greatly enlarged, was found to be a thick-walled unilocular cyst of the left ovary, which had become intimately connected with the uterus. This tumour was practically sessile, and was shelled with difficulty. It contained a pint of creamy brown pus. The peritoneum covering this tumour was like that covering its fellow, thick and milk-white, and studded with small calcareous plates.

Remarks.—In this case, in consequence of a chronic inflammation of a local character, the peritoneum covering both ovarian tumours was extensively converted into a thick milk-white membrane. It is somewhat remarkable that this inflammatory change had occurred equally in the covering of both tumours, seeing that the one on the right side was a solid growth, whilst the other was virtually an abscess.

2. *Ascites rapidly developing without Temperature in Association with a thick, red, and irritable-looking Peritoneum.*

Emma T., æt. 51, and married twenty-eight years, has had two children. She ceased menstruating 2½ years ago. For four weeks patient has complained of pain and of a feeling of weight and tightness in the abdomen.

Physical Signs.—The abdomen is much distended. Both flanks are dull, and the percussion note centrally is dull from the pubis to the umbilicus. The area of dulness is affected by the position of the patient. Fluctuation is readily detected. No floating body can be felt in the abdominal cavity, the veins are not prominent, and the liver dulness is normal. The temperature is normal.

Vaginal Examination.—This was negative.

Abdominal Exploration.—The abdomen contained 3 gallons of a deep straw-coloured fluid. The peritoneum, which was universally thickened, was extremely red and irritable looking. The omentum also was greatly thickened and very hard.

Remarks.—The ascites had rapidly developed, the peritoneum was thick and hyperæmic, but the absence of temperature, and the fact that the fluid did not re-accumulate, renders it difficult for me to hazard any opinion about the probable nature of the disturbance.

3. *Ascites—General Fibroid thickening of Peritoneum—Fibroid induration of Stomach.*

Annie L., æt. 35 and married twelve years, has had one child, which was born two years after marriage. Menstruation recurs regularly, and is of the usual amount. For twelve months patient has complained more or less constantly of slight pain in the abdomen. During the same period she has also complained of sickness. At first she vomited very occasionally, but latterly she has vomited at least once every day. During the last four months patient has observed that the abdomen has been gradually increasing in size. For three weeks the bowels have acted two or three times every day. For two years she has been losing flesh.

Physical Signs.—The abdomen is distended, but it is not tense. All over it is tender to the touch. Centrally the percussion note is dull from the pubis to a point midway between it and the umbilicus. The right flank is dull, whilst the left is resonant. The dulness in the right flank is not affected by position. Fluctuation is readily elicited.

Vaginal Examination.—This is negative.

Two months after coming under observation the abdomen was tapped, and a gallon and a half of straw-coloured serum was drawn off. One month later, the fluid having re-accumulated, the tapping was repeated, but on this occasion one gallon only of a similar fluid was removed. Three months later the patient died. Throughout the illness the temperature was normal.

Necropsy.—On opening the abdomen a large amount of straw-coloured serum escaped, and with it flakes of lymph. The large bowel in its whole extent was greatly distended, whilst the small intestines, which were firmly matted together, formed a ball. The omentum, spread out like an apron, was firmly adherent to the pubis. The stomach was so contracted that it was incapable of holding more than 3 ounces of fluid. The stomach wall was universally more than half an inch thick. The pyloric orifice was so constricted that it must have been difficult for even fluid to pass through it. The peritoneum generally was very much thickened. In both sides of chest the parietal and visceral pleuræ were universally and firmly adherent. Microscopically sections of the stomach revealed only an excess of fibrous tissue.

Remarks.—In this case the fibroid induration was so extensive, and involved not only the peritoneum but the pleuræ and the stomach, that I was, and am still of opinion that the change had most probably been induced by some disturbance in the sympathetic nerve.

4. *Ascites—Degenerate Benign Tumours of both Ovaries—Peritoneum thickened.*

Mary B., æt. 53, and married twice, has never been pregnant. She ceased menstruating seven years ago. For nineteen months patient has complained of enlargement of the abdomen, and of slight pain in both loins. She states that seven months ago she was tapped. There is no œdema of the legs, and the urine is normal.

Physical Signs.—The abdomen is very much distended. Centrally the percussion note is dull from the pubis to the umbilicus. Both flanks are dull, but this dulness varies with the position of the patient. Fluctuation is easily obtained. On palpation a large globular swelling is felt on the left side just above Poupart's ligament. This swelling is movable. Centrally and on the right side is felt another swelling, which is not so globular, however, as the one on the left side, and which reaches from the pubis to within 2 inches of the umbilicus.

Vaginal Examination.—The cervix is flattened from before backwards, and is pushed against the pubic bone. The os looks downwards. The body of the uterus is felt centrally in close apposition with the anterior abdominal wall. It is not enlarged. Posteriorly and to the left of the cervix the vaginal roof is pushed down by a swelling, which appears to be cystic. This tumour is slightly fixed to the pelvic floor, and is evidently continuous with the abdominal swelling located centrally and on the right side.

Abdominal Exploration.—The peritoneum was much thickened. About one gallon and a half of a deep amber-coloured fluid escaped. The central tumour was a partially cystic and partially solid adenoma of the right ovary, which was adherent to the pelvic floor. The surface of this growth, as well as the more solid portion in its interior, was in a state of fatty degeneration. The tumour close to the left Poupart ligament was a unilocular cyst of the left ovary, which was enveloped by gut, and the wall of this cyst was in a state of fatty degeneration. It had evidently been nourished by the gut, to which it was slightly adherent, as its pedicle was so degenerated that it required no ligature.

Remarks.—The peritoneum in this case was much thickened, yet the fluid did not re-accumulate after the degenerate ovarian tumours were removed. It is quite possible that the physico-chemical state of the peritoneum is so disturbed at the time of abdominal section, and more especially when the peritoneal sac is flushed with warm water, that its secreting function is for a greater or less length of time, if not for ever, held in abeyance. At the time of pollination many plants secrete nectar, a juice containing sugar. If, however, the external surface of the nectary is washed with water, the excretion of nectar is forthwith suppressed, and is only reestablished when a small particle of sugar is placed on the surface of the washed nectary.

VII.—YELLOW FEVER.

By Charles Finlay, M.D. (of Havana).

In laying before the readers of this Journal the outcome of thirty-five years' experience and of persistent investigations on the subject of yellow fever, I must mention that on many important points my views are at variance with generally received opinions. For the accuracy of my statements I am prepared to assume the full responsibility, but for the soundness of my inferences others must judge.

Yellow fever is a specific transmissible disease running an acute course and peculiar to certain localities in the lowlands of the Atlantic coasts of the intertropical zone, though liable to be propagated through ships or over land to other regions occupying low levels and having mean temperatures above 18° C.

Historical Sketch.—There is good reason to believe that yellow fever existed along the Atlantic coast of Mexico and Central

America before the days of Columbus; for it is difficult to imagine that the disease known in Montezuma's empire as the "Cocolitsle" (Herrera, *Hist. de las Indias,* Dec. 4, Lib. ix., Cap. viii.), and which prevailed endemically in the present site of Vancouver, could have been any other than the yellow fever of our own days, and the same may be said of the epidemic disease designated under the names of "Peste" and "Contagio," which made so much havoc among the early Spanish settlers on their arrival in St Domingo, Terra-firma, Nombre de Dios, Darien, and Vera Cruz.

It is quite true that none of the Spanish chroniclers of that epoch have given any account of the symptoms of the "Peste." They had probably taken warning from the panic that was produced in Spain by the reports of the first epidemic in St Domingo (1495), when one-third of their number were carried off, and the few who returned to Spain were said to be saffron, or gold-coloured. After that occurrence the home government had found so much difficulty in recruiting settlers for their new colonies, that criminals were enlisted for that purpose, with the inducement of a partial or total condonation of their penalties. It was probably the fear of deterring Europeans from coming over to America that induced the early chroniclers to be silent on the symptoms of the disease, and to attribute the numerous deaths that had to be registered among the new-comers to change of climate, to improper food, or to excessive heat. It is possible also that, at that time, the disease may not have been commonly attended with what is now, in fatal cases, its most striking symptom (black vomit), and that death may have been occasioned (as sometimes happens even now) by the intensity of the primary infection, through nephritis and uræmia. Be this as it may, however, it is in reference to the year 1648 that the first recognisable descriptions of yellow fever epidemics are met with, in Dutretre's *Histoire Générale des Antilles,* and in Corgolludo's *Historia de Yucatan,* the former referring to Guadeloupe and the latter to the Peninsula of Yucatan, both authors having been eyewitnesses to the events which they describe.

In Havana the disease has probably become a permanent endemic since the beginning of the present century. Certainly during the last fourteen years, and probably for a much longer period, not once has a whole month elapsed without the occurrence of some case of yellow fever in this city. The true epidemic season, however,—the period during which the disease shows a decided tendency to spread,—is generally comprised between the months of May and October; the monthly mean temperatures, in the shade, being then between 25° and 29° C.; and the maximum between 35° and 39°·5 C. When the mean temperature, for a succession of weeks, falls to 20° C. (as occasionally happens between December and February), the disease shows a tendency to die out. On certain years (generally those in which the monthly mean temperatures rise above the average), not only are the cases more numerous and the attacks more severe among the unacclimated, but even persons who already considered themselves secure against the infection may then occasionally be attacked.

Nature of the Disease.—Yellow fever is most probably a germ disease. Until a comparatively recent date, violent controversies were carried on between equally competent and reliable observers regarding its contagious or non-contagious character; but the best authorities on this side of the Atlantic seem now agreed that, although yellow fever is not contracted by direct contact with the patients, nor by inhaling the emanations from the sick or the dead, nor by the use of contaminated food or drink, yet it is unquestionably transmissible and specific, in so far that its occurrence invariably implies the introduction of a specific cause derived from a previous case of yellow fever.

The negative conditions just mentioned are borne out by numerous examples of susceptible persons who subject themselves to direct contact with the patients, or inhale the emanations in the sick-room, without thereby contracting the disease, and also by the fact that in colleges, convents, barracks, etc., when several of the inmates become infected, they are seldom attacked in such order as would lead one to suppose that they had received the infection through the food or drink of which all had partaken in common.

Clinical History.—In different localities, in different epidemics or groups of cases, and in different individuals, the symptoms of yellow fever may present considerable departures from any given standard. It will not be difficult, however, to distribute the cases into one or other of the three following classes, which it is most essential that every physician should bear in mind in visiting a yellow fever locality.

The three types or forms alluded to are:—

1. The "acclimation fever," or "non-albuminuric yellow fever."
2. The "plain albuminuric yellow fever."
3. The "melano-albuminuric yellow fever."

The line is drawn between the first and the second forms by the absence of albumen from the urine in the first, and its presence in the second. The distinction between the second and the third forms is established by the presence, in the "melano-albuminuric," of blood or "black vomit" in the stomach or bowels, whereas in the "plain albuminuric," though hæmorrhages may develop in other parts of the body, and vomiting or nausea may be well marked, neither blood nor "black vomit" is ever present in the stomach or bowels.

Between three days and twenty-five days may elapse after exposure to the yellow fever infection before the attack declares itself, vague prodromic symptoms being sometimes experienced. The patient is then suddenly seized with headache and fever (with or without a chill), the headache principally occupying the front part of the head; sensitiveness under the eyebrows, often increased when the eyeballs are rolled upwards; pain in the loins and limbs, and general discomfort. There is general turgescence of the capillary circulation; the countenance is flushed, the eyes injected and watery; the skin may be either dry or moist, sometimes even bedewed with drops of perspiration. The stomach may not be affected except by increased thirst and reluctance for food of every kind, or it may be irritable, throwing up undigested food or bile, rejecting everything that is taken, and sensitive to pressure over the epigastrium. This irritability of the first period generally subsides in the course of the first or second day.

The symptoms are rapidly developed, and the acme of the fever is generally reached during the first or second day, with temperatures which may not exceed 38° or 39° C., but often rise as high as 40° or even 41° C. The pulse is rapid and full at the onset, but after the acme of temperature it slackens, and becomes, as a rule, slower than appears consistent with the fever heat. In nervous, excitable persons, however, the pulse may continue rapid. The urine is generally diminished in quantity, and continues so until the decline of the attack.

The above symptoms are common to the three forms of the disease, though all may not be present nor equally marked. Indeed, excepting the fever and the initial headache, all the others may be wanting, though the pain in the loins and limbs are seldom absent. Neither will their mildness or intensity, except in extreme cases, enable us to decide beforehand in which of the three types a given attack will finally have to be classed.

The first distinctive symptom usually makes its appearance in the course of the second, third, or fourth day, when albumen may be detected in the urine, and the case is thereby excluded from the category of "acclimation fever," which will now be described.

Acclimation Fever.[1]—Some authors include under that head even ephemeral attacks and fevers of two or three days' duration, with no clinical foundation beyond the fact that they occur in susceptible subjects during the prevalence of yellow fever. Such a position is defended on the plea that immunity has not unfrequently been acquired after such mild fevers, and even without any morbid phenomena whatever, by persons who have subsequently resided many years in an endemic focus. From a clinical point of view, however, it seems preferable to restrict the name of "acclimation fever" to cases that present certain features by which they can be positively diagnosed and their analogies with regular yellow fever recognised. I have included in the present category all such cases, provided that no signs of albumen were discovered throughout the attack, by boiling the urine before and after acidulation, even though more delicate tests should on certain days indicate a doubtful trace of it.

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[1] It seems unnecessary to explain that the term "acclimation" is here exclusively used in reference to the yellow fever infection, and independently of other climatic modifications. Our "acclimation fever" does not appear to differ from the "fièvre bilieuse inflammatoire" of the French West Indies and French Guyana, as described by Béranger-Féraud and Burot.

The fever, as already stated, generally reaches its acme within the first forty-eight hours, after which it continues at lower figures, and with more or less marked diurnal oscillations, until the fifth, sixth, seventh, or eighth day, without falling to 37° C.; but on the third or fourth day a remission is usually observed, if carefully looked for, in so much that the temperature either falls lower or rises less high than on the preceding or the following day, at the same hours. During this remission the headache and the other pains disappear or are much relieved, and the patient feels and looks better. It may last only a few hours, or it may continue during a whole day or more. The second paroxysm then commences, being sometimes limited to a slight increase in the temperature, followed by gradual defervescence. In other cases the second paroxysm is attended with temperatures nearly as high as those of the first; the headache and general pains may return, the patient becoming restless. Insomnia is a frequent symptom; the stomach may become irritable, with nausea or vomiting of the medicines and drinks; nervous symptoms of an hysterical character may occur, and a slight sub-icteric tint is often seen in the conjunctivæ. Oozing of blood from the gums, hawking up of bloody mucus or pure blood, epistaxis, anticipated or over-abundant menstruation in women, are sometimes observed between the fourth and the seventh day. Defervescence mostly takes place (below 37° C.) before the eighth day, and convalescence follows, at times attended with dyspeptic or malarial symptoms, but not as a general rule. All the cases of the non-albuminuric type terminate favourably.

Plain Albuminuric Yellow Fever.—Whenever yellow fever is suspected, the urine should be tested each day for albumen, however mild the symptoms may appear. For the sake of an early diagnosis, this should be done at first with Esbach's aceto-picric solution, followed by the application of heat if any precipitate is thereby produced. By this means a trace of albumen is sometimes detected before any opalescence can be produced by simply boiling the acidulated urine. For clinical purposes, however, I deem it preferable to consider as distinctly "albuminuric" only the cases in which the albumen becomes evident by the "boiling" test, properly controlled. This sign may occur as early as within the first twenty-four hours, or not till the end of the third or fourth day. The moment of its first appearance is important, inasmuch as an unusually early date generally betokens a severe infection. The quantity of albumen is also significant for the prognosis, but less so than might be expected,—some cases with very moderate fever and marked albuminuria from the second till the ninth day running a general course in other respects as mild as one of simple acclimation fever. Even then, however, the presence of albuminuria renders a repetition of such attacks highly improbable, even on severe exposure.

As a rule, the "albuminuric cases" are attended with more marked symptoms than the "non-albuminuric." The fever runs higher, the pains are more characteristic and more apt to persist after the remission; the second paroxysm is stronger and oftener attended with an irritable condition of the stomach; nausea, vomiting of glairy mucus, of bile, or simply of the drinks and medicines, and, more rarely, obstinate hiccough, may occur. The urine is liable to become very scanty or entirely suppressed during periods of twelve hours or more, when uræmic symptoms may set in, with delirium or with irregular breathing, and if the secretion be not soon re-established, death becomes inevitable. The hæmorrhagic tendency is more marked; the gums, the buccal mucous membrane, that of the nose or of the female genitals and raw surfaces on the skin are apt to bleed, sometimes to an alarming and even fatal extent.

The yellow tinge of the conjunctivæ and skin is more noticeable, sometimes amounting to decided jaundice, which may continue after convalescence, and, in fatal cases, becomes more marked after death. But, as already premised, every case attended with gastric or intestinal hæmorrhage or black vomit must be considered apart from the "plain albuminuric type." Except in unusually severe epidemics, the great majority of the cases of this class recover. Defervescence takes place between the seventh and the eleventh day, and the albumen shortly after disappears from the urine, often in a sudden manner. In severe cases the convalescence is often tedious, liable to be complicated with skin eruptions, abscesses, parotitis, dyspeptic troubles, or malaria. When uræmic delirium has developed during the attack, the intellectual faculties may not be fully restored until several weeks after defervescence. In fatal cases death generally occurs by asphyxia, by syncope, or by cerebral complications.

Melano-albuminuric Yellow Fever.—From the moment when albumen has been detected in the urine, a second distinctive sign must be constantly looked for. That sign consists in the appearance in the vomit or in the alvine discharges of the black or brown matter known as black vomit or of red blood. The slightest evidence of either at once greatly aggravates the prognosis, as may be judged by the fact that few cases of yellow fever die without having presented that symptom, if vomiting or purging have existed during the advanced stage, or without showing at the autopsy that the black matter or blood had been retained owing to the paresis of the stomach and bowels. Neither the height of the initial fever nor the intensity of the other symptoms can be considered as safe guides in estimating the possibility of the ominous symptom declaring itself. The fever may be unusually high without black vomit necessarily following, or it may be lower than usual in cases which later on will take the melanic type. The pains also may be so slight that the patient declares that he has felt scarcely any, in cases where black vomit makes an early appearance. Great irritability of the stomach, if continued from the first to the second stage, absence of any noticeable remission, high temperature continuing after the second or third day, severe epigastralgia, frequent retching, even when nothing is brought up, a distended or pasty condition of the bowels, irregular breathing, great despondency, an anxious countenance, a dry skin or cold clammy perspiration, are all significant signs that the case is likely to be one of the melanic type. But such indications may fail, and the black vomit declare itself quite unexpectedly, perhaps after some imprudent exertion or mental excitement. It is said, upon good authority, that black vomit has sometimes been observed without albumen having been previously found in the urine. Such an occurrence, however, must be extremely rare. I have met with cases in which the quantity of albumen was but small at the time when black vomit began to appear, but the albuminuria subsequently became more intense, or else could no longer be detected owing to suppression of urine. As a rule, therefore, the occurrence of hæmorrhagic symptoms from the stomach or bowels need not be feared so long as the urine continues to be secreted and shows no signs of albumen. It is generally after the third or fourth day, or at latest on the eighth or ninth, that blood or black vomit makes its first appearance; but in the worst cases it may be seen as early as the second day, some say even on the first day. In such instances the patient appears to have only taken to bed after the first paroxysm of the disease had nearly or entirely gone by under an insidious form. The earliest manifestation of black vomit generally consists of small thin brown or black shreds, follicles, flakes, or powdery particles in suspension in the liquids ejected by the stomach, or else deposited upon the sides or bottom of the vessel in which it is collected. The presence of red blood has the same clinical significance as that of the black substance, the latter being generally considered as blood that has been acted upon by the gastro-intestinal secretions. The liquid in which the dark substance is contained is generally intensely acid. The proportion of the black particles usually increases as the case grows worse, the mixture presenting then the appearance of coffee grounds or soot in an opalescent or pinkish liquid. At other times the vomit presents the appearance of tar, which is the form more frequently observed in the alvine discharges. The vomiting is often attended with severe retching, distressing hiccough, and a burning sensation in the œsophagus and throat, the contents of the stomach being spurted out with violence. Towards the end in fatal cases, the pulse becomes more frequent, even though the temperature may be lowering. Passive hæmorrhages from the nose, gums, tongue, female genitals, leech-bites, and excoriations upon the skin, and sometimes even from the eyes, ears, or scrotum, may be abundant; but at other times they are scarcely marked, being almost entirely limited to the digestive organs. Death is often preceded by suppression of urine and uræmia, but not always. Insomnia, nervous excitement, irregular breathing, jaundice, sub-delirium, uræmic mania, convulsive twitchings, irregular pulse, coma, lividity of the extremities, often close the scene. In other cases the intellect remains clear almost to the last, or the patient may suddenly grow worse and die within a few hours when the most imminent danger seemed to have passed.

Recoveries are not infrequent when the black vomit has been only slightly marked; nor are they rare even when it has been abundant, especially in young subjects under the age of puberty, and in persons who have previously acquired some degree of immunity. In the white race, death is, however, the more frequent termination of the melano-albuminuric cases. In favourable cases the urinary secretion is maintained, epistaxis and other passive hæmorrhages may be abundant, but the respiration and the heart action are not deeply involved (even though the pulse may be remarkably slow), and the black matter or blood soon ceases to be discharged from the stomach or bowels. During convalescence the sequelæ mentioned in connexion with the plain albuminuric cases are more likely to occur; the jaundice may continue for a considerable time.

In other cases a typhoid condition may be established and the recovery considerably delayed, or the patient may never rally, the fatal termination being only postponed by some days or weeks. The great majority of fatal cases, however, end between the fourth and the ninth day; after that date, therefore, the chances of recovery are increased.

Distribution of the three Clinical Forms.—The relative frequency of the three forms of yellow fever varies in different epidemics, but the following proportions may be taken as an approximate estimate among the civil population of Havana in private practice. The majority of the cases are probably "non-albuminuric;" of the remainder more than half are "plain albuminuric," and the balance "melano-albuminuric." The number of the latter appears to be, in some measure, dependent on the treatment instituted at the onset of the attack. Among the military and in certain classes of the civil population, the proportion of severe cases must be greater, owing to their being treated for ordinary complaints in hospitals where yellow fever patients are at the same time admitted, and the chances of infection from the worst forms of the disease must be thereby increased.

Diagnosis.—During the period of invasion, and before any signs of albumen are likely to appear in the urine, the diagnosis can often be made with a tolerable degree of probability, provided that the symptoms are sufficiently characteristic; but a positive differential diagnosis is rarely possible at that early date, specially if eruptive fevers, typhoid, or influenza, prevail at the same time. It happens, too, that the invasion of yellow fever is sometimes preceded by one or two accessions of intermittent fever, which might easily throw the physician off his guard. It is therefore a safe rule in yellow fever countries, and during an epidemic, to look upon every doubtful fever as possibly connected with that disease. This suggestion, so far as disinfecting the alimentary canal is concerned, can always be acted upon without inconvenience, even if other indications have to be attended to.

With the appearance of albumen in the urine between the second and the fourth day of a continued fever, the diagnosis, in Havana, is considered to be established. Black vomit in its characteristic forms may, as a rule, be considered as a decided confirmation of the diagnosis, though it cannot be said to differ (microscopically, at least) from some few samples which I have obtained on rare occasions from cases that had no presumable connexion with yellow fever. Black vomit is, moreover, a characteristic symptom in a form of fever which, in Cuba, attacks native children, and regarding which the profession is divided as to its relations with yellow fever or malaria (the former being probably the correct view).

Next in importance among the diagnostic signs may be ranged the thermometric curve, with a remission between the third and fourth or fifth day, and defervescence (below 37° C.) between the fifth and the eighth. Indeed, some of the "non-albuminuric" cases have to be diagnosed upon this feature alone. A hæmorrhagic tendency, even when very slightly marked between the third and the seventh day, constitutes a valuable sign in mild cases, and the same may be said of the yellow tinge of the conjunctivæ and skin, which is often, however, scarcely perceptible.

Pathological Anatomy.—After death the yellow colour of the skin and eyes becomes well marked in the generality of cases, even when it has been but slight during life. The frequency of this post-mortem symptom is estimated at over 80 per cent. Petechiæ, effusions of blood under the skin or in the intermuscular spaces, are sometimes seen. The sinuses, veins, and capillaries of the brain and viscera are mostly filled with dark fluid blood. The serous cavities often contain some excess of fluid tinged with yellow, as are also most of the tissues. The epithelium of the mucous membranes (gums and tongue) appears degenerated or peeled off. The liver is altered in its outward appearance and in its histological structure; its colour is generally a mixture of yellow with red, brown, or black. The liver cells at places show fatty degeneration or necrosis, while at others they retain their normal appearance. The kidneys often present a parenchymatous nephritis. Hæmorrhagic spots may be found over the surface of the cortex; the epithelium of the tubules may be degenerated, and their lumen contains hyaline, granular, or epithelial casts. The glomeruli often contain granular exudation and hyaline masses within the capsular space. The stomach almost always contains black vomit or blood. Neither ulcerations nor excoriations are commonly found upon the mucous membrane, but the latter is always more or less hyperæmic; the congestion is commonly not general, but is confined to smaller or larger spots or districts, in which it is observed to proceed from one or more centres. From these centres it extends or radiates in a lesser degree, either gradually to be lost or to pass over to another congested district. It is owing to this peculiarity of the congestion that it presents no uniformity of character, but is observed to spread irregularly over larger or smaller portions of the membrane (Schmidt). The small intestines commonly contain more or less black matter, either fluid like that found in the stomach, or mixed with mucus and smeared over the mucous coating, especially of the ileum. This, no doubt, comes partly from the stomach, but in other cases is due to passive hæmorrhage from the mucous membrane of the intestine itself. This membrane presents arborescent patches of congestion. The large intestine occasionally presents similar arborescent patches, but usually it has its normal appearance (Sternberg).

A lesion of a more general character, and to which considerable importance is attributed by competent observers, and by them considered as one of the most constant, is a fatty degeneration of the walls of the small bloodvessels and capillaries of the various organs. (See Dr G. Sternberg's Account of Yellow Fever in Wood's *Reference Handbook of Medical Sciences.*)

In 1881, the proportion of red globules in the blood was determined by Dr Delgado and myself (by Fayem's method) in seventeen healthy Spanish soldiers recently arrived from Spain, and also in thirty-eight other soldiers attacked with yellow fever (albuminuric in every case, and fatal in fifteen of them). This examination was made on different days of the disease upon 121 samples of finger-blood. The results were as follows:—

	Average. Millions.	Maximum. Millions.	Minimum. Millions.
A. Seventeen healthy soldiers—Red globules per cubic millimètre, . . .	4·5	5·5	4·0
B. Thirty-eight soldiers with yellow fever—			
1st day of the disease,	4·55	4·74	4·43
2nd " "	4·56	5·95	3·94
3rd " "	4·80	6·01	3·48
4th " "	4·74	6·20	3·60
5th " "	5·58	6·51	4·34
6th " "	5·01	6·57	3·51
7th " "	5·08	6·20	4·26

The white corpuscles were not expressly counted, but it was judged upon rough estimates that their number was generally diminished. From the figures here given it must be admitted that the proportion of red globules is increased during the attack of yellow fever, the low minimal figures being probably due to excessive loss of blood in particular cases. The abstinence from food to which yellow fever patients are commonly subjected during the first four or five days may have had a share in bringing about the concentration of the blood, but it seems highly probable that filtration of the blood-serum through the altered walls of the capillaries constitutes the chief factor in its production.

(To be continued.)

VIII.—NOTES OF A CASE IN WHICH PREMATURE LABOUR WAS INDUCED FOR CONTRACTED PELVIS (USE OF GLYCERINE INTRA-UTERINE INJECTIONS AND CHAMPETIER DE RIBES'S BAG).

By J. W. BALLANTYNE, M.D., F.R.C.P.E., F.R.S.E.

(Read before the Obstetrical Society of Edinburgh, 14th March 1894.)

ON January 15th, 1894, Dr A. King Mill of Kirriemuir sent Mrs A. to be under my care, with the recommendation that premature labour should be induced, as her last child had to be destroyed on account of the contracted state of the maternal passages.

Clinical History.—I saw Mrs A. on January 16th, and obtained from her the following clinical details. She was 42 years of age, of medium height, and showed no obvious deformity. It could be seen, however, that she had an abdominal enlargement, suggesting that she was near the full term.

She was one of a family of twelve; she had nine sisters and two brothers. Her eldest sister was living, had a large family, and had not had difficult labours. The next member of the family, a female, had had two living children and a miscarriage, and had died in a "decline." The third was the patient herself. The fourth had died in childbed from "inflammation," which came on on the second day of the puerperium, and proved fatal on the tenth. The fifth was also married, and had two of a family; and the sixth had one child. The seventh was not yet married. The eighth, a male, had died in America. The ninth, also a male, was alive and healthy. The tenth, eleventh, and twelfth were unmarried girls, of whom the eldest was 20 years old. In none of her brothers and sisters were there any signs of rickets. The sister who died in childbed had a normal labour with a living infant; but diphtheria was discovered on the second day of the puerperium, and proved fatal.

The patient herself first menstruated when 15, and was always regular. She was married when 27 years old. Her first labour was tedious, but ended naturally; the infant, a male, has since died. Her second confinement also required no interference, and the child, a girl, is still living. The third child, a girl, was born alive by means of turning, and is alive now; she was attended in this confinement and in the subsequent four by Dr Mill. The fourth labour required chloroform and long forceps; the infant, a boy, was born alive. The fifth confinement was similar. In her sixth labour, long forceps were also needed; and the child, a girl, lived only two or three hours. Concerning her seventh confinement Dr Mill tells me that when he reached her (she lived many miles away from Kirriemuir) the head was lying at the brim and was fixed there. The pains were very severe, and the woman was nearly exhausted. Chloroform was given, and the child was broken up and delivered with great difficulty. It was a very large boy. Peritonitis came on immediately after labour, and the patient lay between life and death for a fortnight. Venous thrombosis affecting the right leg was also present, and the patient recovered in an almost miraculous manner.

I first saw Mrs A. on January 16th, when she told me that she considered herself not more than a month from the full time. Her menstrual history, however, was not very clear. She menstruated in May 1893, and did not again see anything till July 9th, when she lost a considerable quantity of blood. She had considered herself as pregnant, and continued to think so notwithstanding the hæmorrhagic discharge on July 9th. She did not feel "life" till the beginning of November,—the sixth month after conception if we accept the view of the mother, the fourth if we believe that impregnation did not occur till after the July hæmorrhage. She reported her condition to Dr Mill about the end of December, for she had been warned not to wait for confinement at the full term.

Condition on January 16*th*.—The general condition of the patient was fairly good, but bronchitic râles were to be heard over both lungs. The heart-sounds were normal, and the urine showed nothing unusual on analysis. Her appetite was good, but she suffered from troublesome constipation.

The breasts showed the usual signs of pregnancy. The abdominal enlargement, from the upper border of the symphysis to that of the uterus, measured between 6½ and 7 inches (17 cms.). Palpation revealed the presence of the fœtal head at the pelvic brim; the limbs were felt on the left side; and the pelvic extremity of the infant lay upwards at the right side. The fœtal heart was most distinctly heard in the middle line just below the umbilicus. The interspinous diameter was 9 inches, and the intercristal 10 inches. The external conjugate was a little over 7 inches, and the intertrochanteric diameter 12¼ inches (31 cms.). The vaginal examination showed that the cervix uteri was situated high up and to the front, so that it could only be felt with difficulty. It seemed as if it were jammed in between the symphysis pubis in front and something which could not be readily felt behind. I made several attempts to measure the diagonal conjugate, but was not very successful, for I could not get the cervix pushed out of the way, and, further, the promontory of the sacrum appeared to be situated at an unusually high level. On one occasion, however, and not without some pain to the patient, I managed to take the measurement of the diagonal conjugate, and found it 3 inches (7·8 cms.). The external pelvic measurements made me doubtful as to the accuracy of this observation, which of course carried with it the conclusion that the conjugata vera could be no more than 2¼ inches; but subsequent measurements made during and after labour proved that it was substantially correct. The diameters within the pelvis and at the outlet were all slightly less than usual, but when it was borne in mind that the patient was only 5 ft. 1¼ in. in height, these latter measurements could scarcely be called abnormally small.

From the history of the case, and from the physical examination, I came to the conclusion that the patient was approaching the end of the seventh month of pregnancy, and that she had a contraction of the pelvic brim sufficient to warrant the induction of premature labour in the interests of both mother and child. I was quite at a loss to explain the cause of the contracted brim, for it was difficult to make the history of the case and the measurements of the pelvis fit in with any of the well-known deformities, *e.g.*, the rachitic, osteomalacic, or justo-minor; but there was no doubt about the existence of a serious degree of shortening at the brim, and the line of treatment was evident.

Progress of Case.—I continued to see her at intervals of a few days. Under treatment her chronic bronchitis greatly improved, the cough disappearing almost entirely. Some puffiness round the ankles, especially the right, showed itself, and was usually most marked in the morning; but her urine continued normal. The uterine swelling was measured from time to time, and showed a regular and steady increase; it grew at the rate of half an inch a fortnight, and about the second week of February the distance from the symphysis pubis to the uterine fundus was a little over 7¼ inches. By this time, also, the bowels, which had been troublesome, were in good order. I decided to induce labour on February 15th, a month after her arrival in Edinburgh, when the pregnancy, according to our calculation, was about 220 days old.

Induction of Premature Labour.—All the usual preparations were made, an incubator was prepared for the child, and strict antiseptic precautions were taken. As there were no reasons for haste I determined to try the use of intra-uterine injections of glycerine introduced by Pelzer, and employed with success by Prof. A. R. Simpson (*Edin. Med. Journ.*, April 1893) and others. Accordingly, at 11 A.M. on February 15th, an injection of about 2 oz. of glycerine was made, by means of a syringe, through the cervix into the lower uterine segment, and a glycerine plug, extending into the cervical canal, was placed in the vagina. The cervix was sufficiently soft to allow the passage of the narrow nozzle of the glycerine syringe. At 2 P.M. the procedure was repeated, again at 4 P.M., and again at 8 P.M. Not the slightest inconvenience was suffered by the patient, and not the slightest sign of uterine action elicited. The cervix uteri was no softer than when the first injection was given and the cervical canal was no larger. An antiseptic vaginal douche was given, and no further operative interference was attempted till the following day. She did not sleep well on account of severe neuralgia in one side of the head, and nausea, perhaps due to absorption of glycerine.

On the next day I proceeded to dilate the cervix, first with Hegar's dilators, and second with Champetier de Ribes's bag. The patient was suffering a good deal from headache and bilious vomiting. Beginning with a No. 6 Hegar dilator, I gradually distended the cervical canal till a No. 12 could pass easily in. At 7 P.M., there being still no signs of labour, I introduced the empty Champetier de Ribes's bag, by means of the special separable forceps provided for the purpose, well within the os internum. On account of the previous dilatation with the Hegar's there was no difficulty in its introduction. The forceps were then unlocked, some water was forced into the bag by means of a Higginson syringe, and first one blade and then the other of the forceps was withdrawn. I now injected six syringefuls of water into the dilator, having previously ascertained by experiment that it needed twelve syringefuls completely to distend the bag. Now, for the first time, at about 7·30 P.M., uterine action began, and soon regular pains were following one another in rapid succession. From time to time more water was forced into the bag, and the nurse was instructed to make occasional traction upon it. At midnight dilatation was complete, and when the bag was withdrawn the head could be felt lying transversely at the brim, with the occiput pointing to the right side. It could also be readily felt that we had to do with a pelvic brim greatly contracted in the true conjugate. On this account, and because the head showed no tendency to engage, although the pains were strong and regular, I determined to perform version. With the help of my friend Dr John Stevens, the patient was anæsthetized. Recognising that there might be great difficulty in the extraction of the head, I made preparations for the performance of symphysiotomy if it were required. The membranes were now ruptured, the right hand passed up on the left side of the pelvis, and the right foot of the child (which lay posteriorly) seized and brought down. The left foot was treated in the same way. During version it was recognised that the conjugata vera measured a very little over 2½ inches, that the pelvic brim was moderately roomy at the sides, and that the Champetier de Ribes's bag had most completely and effectually dilated the cervix and lower uterine segment, making operative interference comparatively easy. The extraction of the infant was proceeded with, and the arms, which had slipped up at the sides of the pelvic brim, were brought down. There was much difficulty in getting the head past the brim, but by means of prolonged traction with the right hand over the nape of the neck and the fingers of the left over the chin and in the mouth (Veit's method), the infant was extracted, the face passing over the perineum. The infant, a female, was resuscitated without much difficulty, but was manifestly feeble, and did not respire satisfactorily. It was put in the incubator and surrounded by hot bottles.

After the birth of the child the cord was tied and cut, and the placenta, which was small but had a normal appearance, was removed. An intra-uterine antiseptic douche was given and a pledget of iodoform gauze placed at the vulva. The patient, who had been very sick during labour, showed no abnormal symptoms on coming out of the chloroform. The uterus contracted well, and there was no post-partum hæmorrhage. The baby was born at 1·45 A.M. February 17th, six and three-quarter hours after the introduction of the Champetier de Ribes's bag and the induction of labour thereby.

The infant, which was weakly from the first, moaned incessantly during the night, and died at 9 o'clock on the following morning. It was 15½ inches in length, had a head circumference of 11¾ inches, a bi-parietal diameter of 3¼ inches, and a bi-temporal of a little over 2¼ inches. At the time of birth the head showed considerable compression laterally.

Puerperium.—The patient suffered from little or no after-pains, and there was scarcely any lochial discharge for the first two days; but thereafter recovery was uninterrupted and rapid. There was no trouble with the breasts, and the temperature never rose above 99° F. The following chart gives the pulse and temperature for the first ten days of the puerperium:—

DATE.	PULSE.		TEMPERATURE.	
	Morn.	*Even.*	*Morn.*	*Even.*
Feb. 17.	90	80	99°	98°·6
„ 18.	75	80	98	98·4
„ 19.	76	80	98·2	98·2
„ 20.	80	80	98·4	98·4
„ 21.	80	80	98·4	98·4
„ 22.	75	80	98	98·4
„ 23.	80	80	98·6	99
„ 24.	75	78	98	98·4
„ 25.	75	80	98	98·4
„ 26.	75	75	98	98·2

Nearly three weeks after labour, during a troublesome attack of constipation the patient felt something slip down, and on making a vaginal examination I found that the uterus had fallen down below the projecting lumbo-sacral promontory and was lying in the pelvis, retroflexed. It was replaced with difficulty, and the patient may need to wear a ring pessary. It is now nearly a month since labour was induced, and Mrs A. is returning to her home in a few days.

Remarks.—The *first* point of interest in this case is the cause of the pelvic contraction. The external measurements did not lead me to expect so great a shortening of the true conjugate as was found at the time of labour; but the fact that the diagonal conjugate measured only 7·8 cms. made me suspect that I had to do with a considerable degree of contraction. At first I was inclined to think that the deformity of the brim was due to rickets; but the patient's obstetrical history (gradually increasing difficulty in successive labours), the absence of rachitic changes in the false pelvis and elsewhere, and the good record of personal and family health, made me incline to abandon this view. The obstetrical history in some ways resembled that in osteomalacia; but there were no other signs of that disease, and the pelvis certainly did not show the typical malacosteon deformation. The question of spondylolisthesis then presented itself. The patient recollected that soon after her marriage she fell down a ladder and injured the lower part of her back; for some days there was considerable bruising over the upper part of the sacrum. Further, the internal palpation of the pelvis during labour suggested spondylolisthesis to my mind, for the finger following up the sacral curve was arrested at the promontory by an excessive and sharply-marked bulging forward of the bone at that point. On the other hand, the vertebral column was quite normal, and there was no marked sinking in of the last lumbar vertebræ. The obstetrical history of the patient, and especially the gradually increasing difficulty of the labours, along with the nearly normal length of the external conjugate, made the supposition of the existence of a simple flat pelvis difficult of acceptance. There remains the view that here we had to do with an osseous or cartilaginous tumour growing forwards from the first sacral or last lumbar vertebra, or from the intervertebral disc between them, and I am inclined to attach more weight to this theory than to any of the others. The future history of the case may serve to clear up this most interesting question.

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The *second* point of interest refers to the choice of operation. The history of the patient, and the fact that in her last confinement craniotomy had to be performed, made it imperative that on this occasion some interference should take place. The patient herself was very anxious to have a living infant; but as she already had four living children, this desire was not allowed to outweigh all the others. Both Dr Mill and I were of opinion that the induction of premature labour would be the safest method of interference as regarded the mother, and would also give a fair chance of life for the infant. So both symphysiotomy at the full term and Cæsarean section were abandoned.

Third, with regard to the choice of a date for the induction of labour I was in considerable doubt. The menstrual history was obscure, but external measurements from symphysis pubis to uterine fundus led me to think that on February 15th the pregnancy was between 7½ and 8 months old, and I decided to induce labour then. Had I been sure about the accuracy of my measurement of the diagonal conjugate at that time I should have induced labour a week or ten days earlier; but I did not expect from the other measurements to find a conjugata vera of only 2½ inches. I could get no data to lead me to a conclusion regarding the menstrual cycle day, for the patient absolutely could not tell me what day of the week her menstrual flow usually began. Suspecting, therefore, a conjugata vera of between 2½ and 3 inches, I induced labour at what I judged to be about 7¾ months (220 days).

Fourth, with regard to the method of induction of labour employed, I determined, as the case did not demand haste, to give a fair trial to the use of intra-uterine injections of glycerine. I must confess that the result disappointed but did not altogether surprise me, for in two other cases of labour in which I had employed this method it had proved unsatisfactory. The glycerine injections having failed, I gladly gave a trial to the use of the Champetier de Ribes's bag so lately described in a paper read before this Society by Dr Haultain. The result justified all that has been said in favour of this instrument. Labour pains at once followed its introduction, and the complete dilatation of the lower uterine segment brought about by its presence greatly facilitated the subsequent manual interference, and materially contributed to the successful completion of the labour.

IX.—A CASE OF CANCER OF THE BREASTS, SPLEEN, AND OTHER ORGANS, WHICH PRESENTED MANY FEATURES OF CLINICAL AND PATHOLOGICAL INTEREST.

By **Byrom Bramwell**, M.D., F.R.C.P. Ed., Assistant Physician to the Edinburgh Royal Infirmary; Lecturer on Practice of Physic, Edinburgh School of Medicine, etc.

(*Read before the Edinburgh Medico-Chirurgical Society, 17th January* 1894.)

The following case presents many points of interest both from a clinical and pathological point of view. The history is as follows:—

A. F., aged 40, single, housekeeper, who was kindly sent to me by Dr T. F. Spence, was admitted to the Edinburgh Royal Infirmary on January 3rd, 1893, suffering from multiple tumours in each breast, and complaining of loss of vision in the right eye, pains in the legs, emaciation, and debility.

PREVIOUS HISTORY.—Until the last four years the patient lived at home, and was comfortably situated in every respect. Since the death of her parents, four years ago, she has had a good deal of work and worry. She enjoyed good health until *May* 1890, when she, for the first time, became aware of the presence of a tumour in the left breast. After a day of hard work, which involved lifting heavy weights, she felt a sharp pain in the left breast. On examining the breast she found that a hard lump about the size of a walnut was situated below the nipple. (This tumour, which had doubtless been in existence for some time before it was observed, proved on post-mortem examination to be a fibroma.) She says that the original lump has not increased in size since it was first noticed, but it has become harder and less movable. Since last October many new lumps have developed on both breasts and other parts.

In January 1892 the patient had an attack of influenza, and although she was only laid up for a few days, she has never been well since.

In July 1892 she was seized with sharp "gripping" pains in the back; these pains radiated round the abdomen. Soon afterwards she experienced pains, which she thought were rheumatic in character, in the shoulders and legs. The pains, which were especially severe in the right hip and left groin and thigh, radiated down the thighs and legs. About the same time the little and ring fingers of the left hand and the left foot became numb, and she experienced a feeling of numbness on the top of her head.

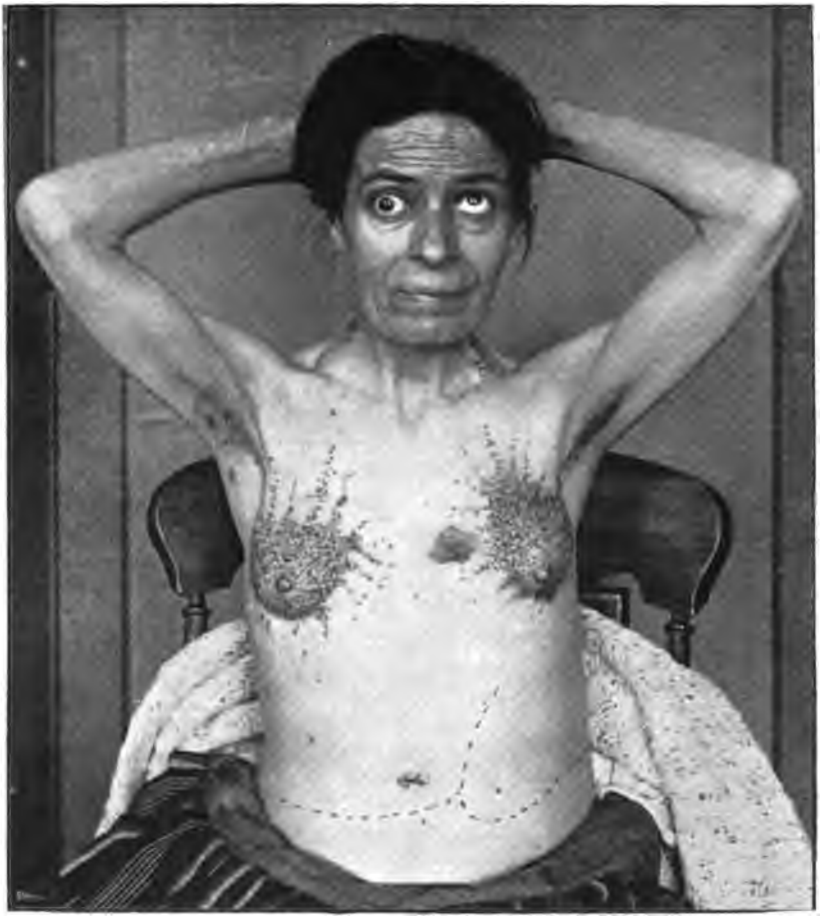
In October 1892 she noticed that many new lumps were developing not only in the left but also in the right breast, and in the skin on the front of the thorax and abdomen. She does not think that these lumps have materially increased in size since they were first noticed, but they have become more numerous; they have never been tender on pressure, or painful.

Towards the end of October spasmodic twitchings affected the right eye, and the patient saw objects double. About the same date the sight of the right eye became impaired, the dimness of vision rapidly increased; in the course of a month the loss of sight in the right eye was so complete that the patient was unable to distinguish light from darkness. She states that at this time the right eye was more prominent than the left, and that it "felt stiff."

For a month prior to her admission to hospital she has been unable to walk without assistance, owing to the pain in the left hip and thigh.

Six weeks ago she was sent by Dr Spence to Dr Allan Jamieson, who agreed with Dr Spence in thinking that the case was one of multiple cancer.

For several months past she has been gradually losing flesh, and



Case of A. T.—Multiple Cancer.

Before the photograph was taken, the cancerous nodules in the breasts, axillæ, neck, and skin of the abdomen and thorax were individually painted black.

While the photograph was being taken the patient was made to look up to the ceiling. The right eye remained immobile, but the right upper eyelid was distinctly raised.

The dark patch on the inner side of the left breast represents the point (covered with collodion) from which a cancerous nodule was excised.

The dotted lines show the size of the liver and spleen on April 1st.

is now considerably emaciated. In answer to direct questions she states that there has been no headache, no vomiting, no giddiness.

THE FAMILY HISTORY is unimportant. Her father died of pleurisy at the age of 71; her mother, of a "stroke" at the age of 75. She has five brothers and one sister alive and well. One member of the family (a brother, a twin with her) died when three weeks old. None of her relatives, so far as she knows, have ever suffered from cancerous or other tumours. So far as she knows, there is no hereditary disease either in her mother's or father's family. Both her father's and mother's relatives have been long-lived.

PRESENT CONDITION.—The patient is pale and thin, the legs in particular being emaciated. So long as she is lying on her back she is quite comfortable, but the slightest movement causes pain in the left hip, thigh, and leg.

The Condition of the Breasts.—Both breasts are infiltrated with innumerable small hard nodules, which are very uniform in size, being for the most part about the size of a garden pea. In the left breast a larger nodule, about the size of a small walnut, is situated below the nipple, which is somewhat pulled down but not retracted by the new growth. The nodules of new growth, though packed in close contact with one another, are, for the most part, isolated and unadherent. They seem to be situated in the milk ducts or lymphatics. When the breast is grasped in the hand the impression conveyed to the mind resembles that which would be produced by grasping a bag tensely distended with peas.

Numerous nodules spread out from each breast in the form of radiating chains (see Fig.). Some of these chains run almost up to the clavicle, others pass towards the axillæ, others towards the middle line, and a few run down towards the abdomen.

Several isolated nodules, varying in size from a small shot to a large pea, are situated in the subcutaneous tissue on the front of the chest and abdomen; a group of nodules is situated round the umbilicus. There are some subcutaneous nodules in each axilla, several on each side of the neck, many in each groin, and one behind the left ear at the junction of the skin with the scalp. There are no nodules in the flexures of the hams or elbows. All of these nodules (with the exception of one or two on each side of the neck and in each axilla, which are somewhat larger in size) are about the size of a small pea; they are all very hard, freely movable, and quite painless; the skin over the nodules, which are colourless, is quite normal. Some of the nodules in the neck and one or two in the axillæ appear to be enlarged glands, but the vast majority of the nodules of new growth do not appear to be glandular.

Abdomen.—No nodules or masses of new growth can be detected in the abdominal cavity on palpation from the front.

The *liver* is markedly enlarged. The hepatic dulness extends from the fourth rib above to a point 2½ inches below the costal margin in the line of the nipple; the lower margin of the liver in the mammary line reaches the level of the umbilicus, the extent of the absolute dulness being 6 inches. The liver feels hard and resisting to the touch, but is not painful or tender on pressure.

The tongue is clean; the appetite fairly good; the bowels inclined to be loose.

The *spleen* is considerably enlarged.

The *blood* corpuscles number 3,430,000 per cubic millimètre; and the hæmoglobin = 65 per cent. The corpuscles, both red and white, are normal in shape and size, and the blood does not, so far as the microscopical examination enables one to judge, contain any abnormal constituents.

The *right eye* is completely blind—the patient cannot distinguish light from darkness. The movements of the right eyeball are very much impaired. The patient is unable to elevate the right eyeball, but when she makes a powerful effort to look upwards the right upper lid is distinctly raised (as much as the lid on the opposite side—see Fig.), and a ring of the sclerotic is uncovered. The downward, outward, and inward movements are also markedly impaired, but not completely lost.

The right pupil is dilated, measuring 4 millimètres; it fails to contract when a beam of light is thrown directly into it; but it distinctly contracts, though less actively than that of the left, during an effort of accommodation; and it actively contracts when a beam of light is thrown into the opposite (left) eye. The right retina is pale and somewhat œdematous, but there is no papillitis. The disc is fairly well defined; the œdema seems to be a general passive swelling of the disc and retina. The vessels of the right fundus (both arteries and veins) are distinctly contracted.

The right eyeball is perhaps slightly more prominent than the left; but if so, the difference is very slight. There is no tenderness on pressure either over the eyeball or any part of the orbit. The tension of the eyeball seems normal and equal to that of the left.

Vision in the left eye is perfect; but the left, like the right retina, is pale, and the vessels of the left fundus appear to be somewhat smaller than normal. The left pupil is active, and the movements of the external muscles of the left eyeball are absolutely normal,—in fact, unusually free.

The legs are very thin, the muscles of the calves being very soft and much atrophied. The knee-jerks are exaggerated on both sides, more markedly so perhaps on the left than on the right; there is no ankle clonus; the plantar reflexes are lively and equal on the two sides. The patient complains of numbness in the right heel, but no derangement of the sensibility of the skin can be demonstrated by objective tests.

The grasping power of the right hand, as measured by the dynamometer, equals 30; that of the left, 40.

The *urine* is normal.

The *circulatory* and *respiratory systems* appear to be normal, but the heart-sounds are weak.

The *temperature* on admission was normal; the *pulse* 92, small and weak.

DIAGNOSIS.—The case seems to be one of cancer. The condition of the breast is, however, quite peculiar. The loss of vision and the paralysis of the ocular muscles in the right eye are probably due to the presence of secondary deposits at the back of the orbit or around the sphenoidal fissure. The enlargement of the liver is probably due to a secondary cancerous infiltration.

TREATMENT.—Morphia, in sufficient doses to relieve the pain, was prescribed, and complete rest in the recumbent position was enjoined.

PROGRESS OF THE CASE.—*January* 7.—The patient had a very restless night; she feels tired and weak to-day—in consequence, she thinks, of an attack of diarrhœa, for which salicylate of bismuth —10 grains three times a day—was prescribed.

January 9.—Diarrhœa better; patient brighter. A mixture containing arsenic, strychnine, and liquor pepticus was prescribed.

January 12.—Bad night; disturbed by another patient in the ward; less pain in the legs.

January 15.—Mr Stiles, who had kindly seen the patient with me more than once, and who agreed in thinking that the condition of the breasts was very remarkable, removed one of the isolated subcutaneous nodules on the front of the chest, with the object of determining the exact nature of the new growths. After hardening, the sections showed the characters of scirrhous cancer.

January 19.—The patient complained to-day of neuralgic pains in the right side of the head. She says that she has frequently experienced the same sort of pain at night, but she again distinctly states that she has no true internal headache.

February 8.—The deposits in the breasts are larger, and the nodules in the groin and on both sides of the neck are more numerous.

February 22.—A rectal and vaginal examination was made today, with the object of trying to determine whether any cancerous deposits were present in the pelvis, which by pressing upon the nerves could account for the pains in the thighs and legs.

No nodules were felt per rectum; but several small hard nodules, exactly like those in the skin of the thorax and abdomen, were felt in the upper part of the vagina, just below the mucous membrane. The mucous membrane of the vagina at its reflection from the uterus was smooth, tense, markedly œdematous, and tender on pressure.

March 3.—The patient to-day complains that the sight of the left eye is becoming dim. She can no longer read with comfort with the left eye, and is consequently much depressed. The liver and spleen are increasing in size; the nodules in the breasts are more numerous; in the centre of the breasts, they give one the impression of being much more closely packed, and in places adherent to one another.

March 30.—The patient says that she feels better and stronger, but she is certainly thinner. The red corpuscles now number 2,410,000, and the hæmoglobin = 46 per cent. Vision in the left eye is almost *nil*, though the patient can still distinguish light from darkness with this eye.

April 1.—The liver and spleen, more especially the spleen, are much larger than they were a month ago; both organs feel very hard and stony; the surface both of the liver and spleen is quite uniform and smooth. Firm pressure over the enlarged liver and spleen does not cause any pain, uneasiness, or discomfort. The upper part of the left femur is enlarged, nodulated, and tender on pressure.

The patient is rapidly going down hill; she looks no worse in the face, and she says that she feels better and brighter. The liver dulness now measures 12 inches in the line of the nipple. The tongue is clean; the appetite still remains pretty good. There is no headache, no sickness, no jaundice. Both pupils are now widely dilated; the left still contracts to the stimulus of light, but much less actively than normal. Both pupils still contract feebly on an effort of accommodation. The upward, downward, and lateral movements of the left eyeball are now slightly impaired.

On ophthalmoscopic examination the fundus in each eye is pale, and the vessels (both arteries and veins) small. The eye-ground in both eyes is pale and slightly œdematous, but the discs are well defined, and there is no papillitis.

April 6.—The morphia which the patient has been taking since admission to be repeated in larger doses whenever the pains are troublesome or the patient is restless or uneasy.

April 17.—The patient complains of pain in the chest and shortness of breath, but nothing in the lung or pleura can be detected to account for the dyspnœa. The abdomen is much distended and flatulent. The heart sounds are very weak. The percussion note over the right base is considerably impaired, but this is apparently due to the enlargement of the liver. Several small subcutaneous nodules have developed over the back of the trunk. The feet are swollen.

April 24.—The patient is quite blind; she cannot now distinguish day from night. The abdomen is more swollen, and contains some fluid. The liver and spleen are still increasing in size. The left femur is more swollen. Fine crepitations and bronchial râles are audible over the front of each chest. The patient is so weak that the back was not examined. The œdema of the feet is increasing.

The temperature has continued practically normal since the date of her admission. There have been occasional slight rises, the highest point reached being 101° on March 22nd. The pulse has ranged from 80 to 110.

May 1.—Patient died to-day.

POST-MORTEM APPEARANCES.—The post-mortem examination was made by Dr Leith on May 2nd, twenty-seven hours after death.

The body was much emaciated. The lower extremities were markedly œdematous, the skin being white and shiny. The abdomen was considerably swollen; the enlarged liver and spleen could be both seen and very distinctly felt through the front wall of the abdomen. The peritoneal cavity contained some free fluid.

Both breasts were infiltrated with numerous small hard nodules, the exact character of which has been previously described; chains of nodules radiated out from the breasts towards the clavicles, axillæ, middle line, and abdomen. Many small isolated nodules were scattered here and there over the front of the thorax, abdomen, and back. Several small hard nodules, and one or two enlarged glands, were present in the axillæ. Many small pea-like nodules were present in the groins, and there were several on each side of the neck. With rare exceptions, the nodules were of small size, very few of them reaching the size of a horse-bean.

The *abdomen* contained a considerable quantity of clear straw-coloured fluid. The *mesentery* was much retracted; many small nodules were scattered through its meshes; it was not thickened; it did not form a transverse coil in the upper part of the abdomen, as the cancerous mesentery is apt to do.

The surface of the *peritoneum* was thickly studded with small nodules, which varied in size from a pin's head to a split pea.

The *liver* weighed 4¼ lbs., and was studded throughout with innumerable white cancerous nodules, most of which were round and of small size, few of them being larger than a large pea. The surface of the liver was quite smooth and uniform, and the capsule of the organ was not thickened or inflamed; none of the nodules projected above the surface of the organ; a few of them which were situated just below the capsule were slightly depressed in their centres. In the left lobe the cancerous nodules were so closely packed that the whole liver substance seemed to be uniformly infiltrated with cancer; in some parts of the right lobe the nodules were more isolated, but in no part of the right lobe was there any portion of liver substance larger than a sixpence which was unaffected.

The *spleen* was enormously enlarged and hard; it measured 8¾ inches in length, 4⅝ inches in breadth, and 4½ inches in thickness, *i.e.*, from before backwards, and weighed 3 lbs. 14 oz. Its surface was absolutely smooth and uniform; the capsule was not thickened, but was translucent and glistening in appearance. On section the organ was found to be infiltrated with innumerable small cancerous nodules; the nodules, which were for the most part round, varied in size from a pin's head to a large pea, running here and there into one another. In some places the individual nodules could be distinctly seen through the capsule, which was neither thickened nor opaque.

Both ovaries were enlarged, each about the size of a large walnut, hard and irregular on their surface; they contained several small nodules. Several small nodules were situated in the upper part of the vagina; one in the uterus. Many small nodules were situated immediately around the sciatic nerves in the pelvis.

The *kidneys* each weighed 6 oz.; numerous small deposits of cancer were present just below the capsule: several small deposits in the cortex, and a few in the pyramidal portion.

The *suprarenal capsules* were surrounded by many small nodules. They were of normal size and thickness. On section, numerous small cancerous deposits were seen in the substance of the capsules; in places these deposits were confluent, and had entirely replaced and destroyed the gland tissue.

One small nodule was found in the *pancreas*. Three small nodules were situated in the *stomach*, beneath the mucous membrane. None were found in the intestines.

The *left pleural sac* was practically dry.

The *right pleural cavity* contained a small quantity of clear straw-coloured fluid.

The *pericardium* contained ½ oz. of clear straw-coloured fluid.

The *heart* was small; it weighed 10½ oz. Numerous cancerous nodules of small size were situated just beneath the pericardium, on the surface of both ventricles and both auricles; they were more numerous over the posterior surface of the left ventricle, near the apex, than elsewhere. The muscular substance and valves seemed healthy.

Many small nodules of new growth were situated beneath the *parietal pleura*. Innumerable small nodules about the size of miliary tubercles were scattered over the surface of each lung, just in the *visceral pleura*. One or two dark pigmented nodules the size of a small pea were found on section just below the pleura, and slightly infiltrating the substance of the lung. The bronchial glands were slightly enlarged, and infiltrated with nodules, which to the naked eye looked like grey tubercles, but which on microscopic examination were found to be cancerous.

The *dura mater* was thickened, and infiltrated with innumerable cancerous nodules, some of them as large as a split pea. The thickening and infiltration were most marked over the vertex, and in the anterior and middle fossæ at the base. The soft membranes were unaffected; they stripped readily off from the surface of the brain. The brain substance itself seemed to be perfectly normal.

The thickening of the dura was very marked around the sphenoidal fissures, especially the right sphenoidal fissure; the optic and other nerves were nipped and compressed by the thickened dura as they passed from the cranial cavity into the orbits. There was nothing found in the orbital cavities nor in the eyeballs, so far as could be discovered with the naked eye.

The *spinal dura mater* was much thickened in the mid-dorsal region, and some of the nerve roots (more especially the posterior roots, for the thickening was more marked on the posterior than on the anterior surface of the spinal dura mater) were compressed. The cord appeared to be normal.

The upper third of the left *femur* was considerably thickened, softened, and bent. The surface of the bone was irregular and nodulated. Numerous small cancerous nodules could be seen and felt beneath the periosteum; they extended over the whole surface of the bone to within a few inches of the knee. The bone was removed *en masse* for separate examination; on section, the bone tissue and the central canal were found to be thickly studded in the upper third with typical nodules of cancer.

The larynx, thyroid gland, and œsophagus were free from nodules; the thyroid gland was somewhat small and atrophied.

REMARKS.—This case presents many points of unusual interest. The more important are as follows:—

1. The peculiar character of the breast lesions, and the remarkable way in which the cancer was evidently making its way along the lymphatics.

2. The widespread diffusion of the cancer throughout the body. The breasts, liver, spleen, ovaries, peritoneum, pleuræ, dura mater, and periosteum of the left femur were thickly studded with small cancerous deposits, which were very uniform in size. The skin, pericardium, mesentery, suprarenal capsules, femur, stomach, and pancreas, all contained nodules.

3. The remarkable condition of the spleen. The organ weighed 3 lbs. 14 oz., and measured 8½ × 4¾ × 4½ inches. The enlargement of the spleen was due to the deposit of innumerable small nodules, which were so thickly set as to produce a diffuse cancerous infiltration. Secondary deposits of cancer of the spleen are at any time very rare. I have never seen anything like the cancerous enlargement of the spleen which was present in this case.

4. The fact that the cancerous liver and cancerous spleen were perfectly smooth and regular on their surfaces, and that the capsules of both organs were in no way thickened or inflamed.

5. The diffuse cancerous infiltration of the dura mater, which was unattended with any symptoms except those due to constriction of and pressure on the optic and ocular nerves.

6. The cancerous infiltration of the left femur. Beautiful nodules of cancer were seen both in the periosteum and on section throughout the bone.

7. The remarkable absence of symptoms associated with the

innumerable deposits of cancer in so many of the most important organs of the body. The cancerous nodules in the breast, and the cancerous enlargement of the liver and spleen, were absolutely painless. The pain in the legs seemed to be due to pressure on the nerves in the pelvis, and to the cancerous infiltration of the left femur and its periosteal covering.

8. The total loss of vision and the paralysis of the ocular muscles, due to compression of the nerves by the thickened dura, as they passed from the cranial cavity into the cavity of the orbit. The absence of optic neuritis is also noteworthy.

9. The complete absence of headache, sickness, and other symptoms of cerebral disturbance. This was a remarkable feature of the case.

10. The fact that although the liver and spleen were infiltrated with cancer, the resulting enlargement was quite regular, smooth, and painless. I have met with several other cases of cancer of the liver of the same kind. They constitute exceptions to the rule that the enlargement of the liver which is produced by cancer is irregular and painful. In cases of this kind, the stony hardness of the liver is of more importance as a diagnostic of cancer than the irregularity of the surface. But in such cases, unless there are other cancerous deposits elsewhere, the differential diagnosis from cirrhosis is very difficult, sometimes impossible. In this case there was no jaundice, and until the later periods of the case no ascites.

11. The absence of symptoms of Addison's disease, notwithstanding the dense cancerous infiltration which surrounded the suprarenal capsules and the presence of many small cancerous nodules in the tissue of the capsules.

In the article on Addison's disease in the first volume of my *Atlas of Clinical Medicine* (page 69), I have discussed at length the morbid anatomy and pathological physiology of the disease, and have summed up the discussion in the following terms:—"The theory which in my judgment is by far the most satisfactory is that which supposes—(1), that the lesion of the capsules is primary; (2), that as a result of that lesion the nervous structures in the neighbourhood of, or connected with, the capsules, are implicated; and (3), that it is to the nerve disturbances produced in this manner that the symptoms of the disease are for the most part due. It is perhaps possible that some of the symptoms of Addison's disease may be the direct result of abolition of the (glandular) function of the suprarenal capsules. Because complete (cancerous) destruction of both suprarenal capsules does not produce the characteristic and typical symptom of Addison's disease (I mean the pigmentation), it does not, of course, follow that abolition of the function of the suprarenal capsules does not produce any symptoms whatever."

12. The condition of the visceral pleura. This was very interesting from a pathological point of view.

13. The complete absence of all inflammatory disturbance around the cancerous nodules. Notwithstanding the cancerous infiltration of the liver, spleen, pleura, pericardium, and dura mater, there was no trace of perihepatitis, perisplenitis, pleuritis, pericarditis, or meningitis.

14. The fact that, notwithstanding the complete inability to raise the eyeball, the upward movement of the upper lid was still retained.

Note.—An exhaustive microscopic examination, which Dr Leith has kindly made, shows that the condition was cancer.

(*Dr Leith's Pathological Report of this case will appear in a future number of this Journal.*)

Part Second.

REVIEWS.

A Text-Book of the Theory and Practice of Medicine by American Teachers. Edited by WILLIAM PEPPER, M.D., LL.D., Provost, and Professor of the Theory and Practice of Medicine, and of Clinical Medicine, in the University of Pennsylvania. In Two Volumes. Illustrated. Vol. II. Philadelphia: W. B. Saunders: 1894.

IN July 1893 we printed a notice of the first part of this work, of which the volume to hand is a worthy continuation. In addition to the editor himself, William H. Welch, Henry M. Lyman, William Osler, James C. Wilson, Francis Delafield, James W. Holland, and Reginald H. Fitz contribute articles. The first chapter is devoted to a study of the Biology of Bacteria, infection and immunity, written by W. H. Welch, who has succeeded in gathering together in a well-digested form a mass of information about the many questions which hang round this subject, and which are at present the source of so much speculation. Especially successful are the paragraphs in which immunity, active and passive, is discussed. The diathetic diseases are next described by H. M. Lyman, of which the chapters on Obesity and Gout are the best. The description of Saccharine Diabetes is not so happy as that of other diseases in the book. The question of the use or misuse of salicylic acid and the salicylates in acute rheumatism is mentioned, but we do not think that sufficient emphasis has been laid on the recorded instances in which these drugs seem to have acted deleteriously, nor do we think that salol is appraised at its proper value. To state that the chapters on the Diseases of the Blood are by William Osler is sufficient criterion of their excellence. They are in the main, we should say, very similar in treatment to those already published by him in his text-book of medicine, but here extended to double the length.

The editor himself writes clearly and well on the Diseases of the Circulation. We notice that he includes exophthalmic goitre in this system, describing it as a neurosis affecting particularly the cardiac innervation. In neither the description of the diseases of the circulatory system nor in that of the respiratory is there a preliminary note explanatory of the physical signs as used in the book. Not that we would wish a detailed account of them in a text-book such as this; but as almost every author has his peculiarities of nomenclature, a short summary explaining the exact meaning of his terms would be useful. Drs James C. Wilson and F. Delafield take in hand the Diseases of the Respiratory System, for their description of which we have little but commendation. The classification of pneumonia is not quite the same as ours. But the difference lies more in the names applied than in the actual divisions resorted to. Hypostatic pneumonia, we suppose, is included in the name secondary lobar pneumonia, although usually it more nearly approaches the lobular form. A third form noted is called lobar pneumonia with the formation of connective tissue, of which Dr Delafield gives a good description, with notes of twelve cases. We confess that to students calling the pulmonary congestion of heart disease a pneumonia, or referring again to pneumonia with the formation of connective tissue, under the heading of interstitial pneumonia, and classing it with anthracosis, will be apt to be misleading.

In the advice given about the treatment of phthisis by climate a sensible note is struck when it is said that "the selection of a proper climate is to be made with reference to the individual rather than to the condition of the lungs. It should be a climate where he feeds well, eats well, sleeps well, and gains flesh and strength."

An able part of the book is that devoted to the consideration of the Diseases of the Digestive System, the section descriptive of the diseases of the stomach being particularly well up to date, though necessarily somewhat circumscribed. Naturally, Prof. Fitz's article on Diseases of the Pancreas is as good as it well could be.

A perusal of the second volume confirms our opinion of the book as a whole which we expressed before. We notice, however, a want of exactness and an indefiniteness in the arrangement of the disorders of particular systems, such as we have already noted above with regard to pneumonias, and another instance of which may be found in the classification of the different diseases of the kidney. Few could make out from the text if amyloid degeneration of that organ ever occurred, or what relation subacute nephritis had to it, if any.

The Student's Handbook of Medicine and Therapeutics. By ALEXANDER WHEELER, L.R.C.P. Ed., L.R.C.S. Ed., etc. Edinburgh: E. & S. Livingstone: 1894.

DR WHEELER writes this, the latest addition to the numerous handbooks of medicine, in the character of a tutor of long experience. We wonder if it never strikes such tutors that they might profitably gain more by practice and experience in diagnosis and treatment before venturing into print and culling main facts from the pages of recognised authorities to boil them down into a *soupe maigre.* Dr Wheeler has yet to learn how to write a book in proper sequence: one of his sentences comes from him personally, the next from the editorial "we," while the third probably is couched in the third person singular. Such slipshod writing is irritating. For the actual matter of the book itself—which, after all, is the main thing—we can commend it as being short, correct so far as it goes, harmless, and perhaps beneficial to the dull-witted student appealed to in the preface. It is well printed, and illustrated with some rudely-drawn but well-reproduced diagrams.

The Law of Psychic Phenomena: a Working Hypothesis for the Systematic Study of Hypnotism, Spiritism, Mental Therapeutics, etc. By THOMSON JAY HUDSON. London: G. J. Putnam's Sons. Chicago: A. C. M'Clurg & Co.: 1893.

THE author starts with the basis of a working hypothesis which, as he says, may or may not be true, but which, if no known fact in the universe disproves it, can be used just as has been used the atomic theory or Newton's theory of gravitation. In the field of psychological investigation a satisfactory working hypothesis has never yet been formulated. Many theories have been advanced, it is true; but although some are very plausible and satisfactory to the authors when applied to a particular class of facts, they utterly fail when confronted with another class of facts.

There is one pregnant fact pertaining to all kinds of mental therapeutics, from mesmerism to faith cures, which is, that marvellous cures are constantly effected through these various agencies; and to the casual observer it would seem almost self-evident that there must be some one principle underlying all, which, if once understood, would show them to be all identical as to cause and mode of operation.

Our author finds the key to the necessary working hypothesis in Liébault and Bernheim's discovery, "that hypnotic subjects are constantly amenable to the power of suggestion; that suggestion is the all-potent factor in the production of all hypnotic phenomena. This proposition has been demonstrated to be true beyond the possibility of a reasonable doubt." The author gives three general propositions, which are applicable to all phases of psychological phenomena. The first is that man has, or appears to have, two minds, each endowed with separate and distinct attributes and powers, capable, under certain conditions, of independent action; the one he designates the objective mind, the other the subjective mind. The second proposition is that the subjective mind is constantly amenable to control by suggestions. The third or subsidiary proposition is, that the subjective mind is incapable of inductive reasoning. The difference between man's two minds the author believes to be as follows:—"The objective mind takes cognisance of the objective world; its media of observation are the five physical senses. It is the outgrowth of man's physical necessities. It is his guide in his struggle with his material environment. Its highest function is that of reasoning.

"The subjective mind takes cognisance of its environment by means independent of the physical senses. It perceives by intuition. It is the seat of the emotions and the storehouse of memory. It performs its highest functions when the objective centres are in abeyance. In a word, it is that intelligence which makes itself manifest in a hypnotic subject when he is in a state of somnambulism. . . . .

"In point of fact, that which I have chosen as the subjective mind appears to be a separate and distinct entity; and the real distinctive difference between the two minds seems to consist in the fact that the 'objective mind' is merely the function of the physical brain, while the 'subjective mind' is a distinct entity, possessing independent powers and functions, having a mental organisation of its own, and capable of sustaining an existence independent of the body. In other words, it is the soul."

Starting with this hypothesis, the author, who is evidently deeply read in the subject, differentiates the reasoning powers of the two minds, explains the perfect memory of the subjective mind, and illustrates the perception of the fixed laws of Nature. He goes on to treat of hypnotism and mesmerism, asserting the impossibility of the hypnotiser causing his subject to commit crimes against his will, and sketches a new system of mental therapeutics. He next deals with the phenomena of spiritism, and concludes with chapters on the physical manifestations of Christ, the spiritual philosophy of Christ, and deductions from the attributes of the soul.

The author refers to six different systems of psycho-therapeutics, based upon as many different theories, differing as widely as the poles, and each presenting indubitable evidence of being able to perform cures which in any age but the present would have been called miraculous. We may quote his summary of these six systems, because they are clearly given, and because nowadays it is just as well to possess in a crystallized form the main features concerning methods of treating disease which flood the lay press, and for the matter of that, the medical press on the Continent and in America:—

"1. *Prayer and religious faith,* as exemplified in the cures performed at Lourdes and at other holy shrines. To this class also belong the cures effected by prayer alone,—the system being properly known in this country (America) as the 'faith-cure and the prayer-cure.'

"2. *The Mind Cure.*—A professed method of healing which rests upon the supposition that all diseased states of the body are due to abnormal conditions of the mind, and that the latter (and thus the former) can be cured by the direct action of the mind of the healer upon the mind of the patient.

"3. *Christian Science.*—This method of healing rests upon the assumption of the unreality of matter. This assumed as a major premise, it follows that our bodies are unreal, and consequently there is no such thing as disease, the latter existing only in the mind, which is the only real thing in existence.

"4. *Spiritism,* which is a system of healing based on the supposed interposition of the spirits of the dead operating directly or indirectly through a medium upon the patient.

"5. *Mesmerism.*—This includes all the systems of healing founded on the supposition that there exists in man a fluid which can be projected upon another at the will of the operator, with the effect of healing disease by the therapeutic action of the fluid upon the diseased organism.

"6. *Suggestive Hypnotism.*—This method of healing rests upon the law that persons in the hypnotic condition are constantly controllable by the power of suggestion, and that by this means pain is suppressed, function modified, fever calmed, secretion and excretion encouraged, etc., and thus Nature, the healer, is permitted to do the work of restoration."

The author believes that the scientific mind must come to the obvious conclusion that there must be some underlying principle which is common to all these, and that it is the task of science to discover that principle; and he believes that the essential mental condition prerequisite to the success of every experiment in psycho-therapeutics is faith—a purely subjective faith—which is attainable upon the cessation of active opposition on the part of the objective mind. The author shows how the statement is often made to patients that faith is unnecessary, and shows that it is a cunning evasion of the truth for the very purpose of inspiring faith, but he thoroughly disapproves of it. "A patient enters the sanctum of mental healer and begins by saying, 'I understand that it is necessary that your patients have faith before they can be healed. If that is the case I can never be healed by mental treatment, for I am utterly sceptical on the subject.' To which the ready reply is, 'Faith is unnecessary under my system. I do not care what you believe, for I can heal you however sceptical you may be.

This is generally satisfactory to the sceptic. He brightens with hope and submits to the treatment, full of the faith that he is to be healed without faith. It is superfluous to add that by this stroke of policy the healer has inspired the patient with all the faith required, namely, the faith of his subjective mind."

We must now leave the author. His book is full of interest, and may be read with profit even by the most sceptical physician.

Injuries and Diseases of the Jaws. By CHRISTOPHER HEATH. Edited by HENRY PERCY DEAN. Fourth Edition. London: J. & A. Churchill: 1894.

IN this, the fourth edition of Mr Heath's well-known work on *Diseases of the Jaws*, the distinguished author has been assisted in its preparation by Mr Percy Dean, Assistant Surgeon to the London Hospital,—the latter having modified the arrangement of some of the material so as to bring it into more correct relation with modern pathology, whilst the former has exercised a general supervision, and has incorporated the experience of another ten years of active professional life. We are glad to find that the numerous excellencies which characterized former editions have been retained, and that the task of bringing it abreast with modern pathology has been creditably performed by the editor, who is also responsible for a chapter on parasitic diseases, including Actinomycosis and Mycosis Aspergillina. Nevertheless we could have wished for a more scientific arrangement of the material dealing with the inflammatory affections of the jaws than one chapter on Inflammation and Abscess and another on Necrosis, under which are grouped syphilitic, phosphorous, mercurial, and a number of other diseases in a manner which leaves much to be desired. There is, further, the serious omission of any proper description of tubercular diseases of the jaws, which are commoner than the author would lead the reader to believe. In the index, which is otherwise fairly exhaustive, tubercle is not even mentioned.

Les Maladies du Soldat. By Dr H. MARVAUD, Médicin principal de I$^{re.}$ classe de l'Armée. Paris: Felix Alcan: 1894.

APPEARING so shortly after the larger treatise by Delorme on *The Surgery of War*, this work, by another of the Professors at the Val-de-Grâce, may be regarded as an indication of the ability and energy of those at the head of the Medical Staff of the French army. The bent of the present volume is medical rather than surgical, and especially treats of the pathogenesis, clinical features, and prophylaxis of the diseases occurring in garrison life as well as in active service. Inasmuch as the standing army of France at the present day represents more than half a million of men, its medical administration in time of peace is of the first importance, not only with a view to their maintenance in a state of efficiency for service, but in view of their early return to civil life when their term of compulsory service has expired. The subject-matter is arranged in five sections, of which the first is devoted to a general study of the morbidity and of the mortality of the soldier under the different conditions of military life. The second and most comprehensive section, constituting about two-thirds of the volume, treats of the infective diseases, which are by far the commonest of the maladies to which the soldier is liable; amongst these, typhoid, tuberculosis, and the eruptive fevers receive a large share of attention, over thirty pages being devoted to the subject of vaccination. The succeeding sections include chapters on rheumatism and other general conditions, on diseases of the different systems, and, lastly, on diseases accidentally met with in soldiers, *e.g.*, venereal diseases, insolation, etc. We have formed a very favourable opinion of this work, and we congratulate the author on the practical value of its teaching.

La Pratique Journalière de la Chirurgie dans les Hôpitaux de Paris. Par le Prof. PAUL LEFERT. Paris: Baillière et Fils: 1894.

THIS little volume presents a distant resemblance to our own *Year-Book of Treatment;* it deals with subjects in the domain of surgical practice, and gives a *résumé*, under the head of each disease, of the methods of treatment employed by a number of different surgeons attached to the hospitals in Paris; on this basis the editor calculates that the information conveyed is equivalent to over 400 consultations with the best authorities. We would not like to express an opinion as to the likelihood of this contention being maintained by the reader, but we incline to the belief that it will be chiefly prized by candidates who intend appearing for examination before the Surgical Faculty of Paris.

La Pratique des Maladies du Système Nerveux dans les Hôpitaux de Paris: Aide-Mémoire et Formulaire de Thérapeutique Appliquer. Par le Professeur PAUL LEFERT. Paris: Baillière et Fils: 1894.

THIS is a most useful little work. It gives at a glance the treatment employed in the diseases of the nervous system by the principal physicians in the Paris hospitals. It is intended to refresh the memory, and it may be consulted with advantage by any one, but especially by junior practitioners. The instructions are brief, yet not too brief to be of intelligent use.

Myxœdema, and the Effects of Climate on the Disease. By A. MARIUS WILSON, M.D. London: The Scientific Press, Limited: 1894.

WE fail to see that the multiplication of such *books* of this nature can serve any useful purpose. Although nowadays it seems to be the thing for everyone who can do so to search out a case of myxœdema, and to publish it with a photograph both before and after treatment, yet all this author has to offer in regard to the effects of climate on the disease is the relation of one case, the patient having resided at the Cape for thirty-seven years. Surely a report in any of the medical journals would have been sufficient.

Aids to Otology (Second Edition of "Epitome of Ear Diseases"). By W. R. H. STEWART, F.R.C.S.E., Aural Surgeon to the Great Northern Central Hospital; Surgeon to the London Throat Hospital, etc. London: Baillière, Tindall, & Cox.

THIS is one of the Students' Aid Series, and does not pretend to compete with fuller and more extensive works upon the same subject. If it be admitted that such works are useful to the student, we think that this book is particularly well calculated to give him a general knowledge of the subject with the least amount of reading. It is much condensed, but the condensation has been well done. It is a *multum in parvo*, and its clearness and brevity indicate that the author has a thorough and extensive grasp of his subject, and the power of easily imparting his knowledge to others.

Stammering: Its Nature and Treatment. By EMIL BEHNKE. Fourth Edition. London: T. Fisher Unwin: 1893.

Causes of Voice-Failure. By MRS EMIL BEHNKE. London: Curwen & Sons.

THE first of these two pamphlets consists of a lecture by the late Mr Behnke, which has already appeared in the columns of the *Journal of Laryngology*. It is stated to be an endeavour to analyze the nature of stammering and to methodize its treatment. The latter deals with the errors in voice-production and training. It is needless to say the writers give instruction in elocution, etc.

A Practical Treatise on Diphtheria and its Successful Treatment. By BROWNLOW R. MARTIN, M.B. Dublin Univ. London: Baillière, Tindall, & Cox: 1894.

THIS little book of thirty-two pages does not profess to deal exhaustively nor from a scientific point of view with the diagnosis and treatment of this terrible disease. It is written by the author in order to advocate his method of treating diphtheria, in the efficacy of which he has a firm belief. This treatment in the main consists in *frequent and free* insufflation into the throat of powdered sulphite of magnesium.

The Brooklyn Medical Journal, 1894. "Chloroform and Ether: Some Suggestions for their Safer Administration," by LEWIS G. LANGSTAFF, M.D.

DISCUSSION of the relative merits of chloroform and ether is not confined to the medical journals and societies of this country, but is carried on in Europe and America with great zest and earnestness. In America—the land of journalism—recently there have been numerous papers read before societies on the production of anæsthesia, and reports of these are constantly received in this country. One of the most recent is the paper by Dr Langstaff, on "Chloroform and Ether: Some Suggestions for their Safer Administration," read to the Brooklyn Gynæcological Society to open a discussion on the subject. In this paper, at the outset it is stated "to be a current opinion that the risk of chloroform lies in its depressing effect on the heart, and death may result from a paralytic effect. Hence it is to be avoided where the heart is weak or embarrassed in any way." Later, allusion is made to the view of the Hyderabad Commissions. While not denying that death from the heart side may occur, the author seems to favour the view that it is of rare occurrence. He does not favour special apparatus or mixtures of ether and chloroform, etc., but states that "If one agent be unsuitable to a particular case from some idiosyncrasy, I would use another." It would have been better to have used the term *circumstance* or *complication* rather than idiosyncrasy.

In reference to administration he gives the following advice:—"Do not depend on any one sign that the patient is sufficiently 'under.' Do not watch the respiration or pulse alone—watch everything that pertains to the patient's condition under the anæsthetic. Perfect relaxation of the limbs is an indication that the patient is ready for the operation. Stertorous breathing and insensible conjunctivæ may occur before this, although quite commonly neither are shown during a whole operation. If all the signs of anæsthesia are present,—the three above named, with pain and reflex action generally abolished,—the patient is probably too deeply narcotized."

We agree with the first of these statements, but believe that it is only necessary to watch the breathing. *If the breathing be satisfactory, the patient is in a safe condition.* Stertorous breathing and insensible conjunctivæ may obtain, and yet reflex movements occur on pinching or other painful stimulus,—evidence that the patient is not sufficiently under, and that more of the drug should be exhibited. Stertor is frequently palatal or labial, and must be distinguished from laryngeal stertor or crowing, a sign of *too* deep anæsthesia.

With the remark that the danger of anæsthetics lies almost entirely in over-dosage we agree, but the risk of too little must also be remembered; and we cannot refrain from remarking that the tendency of the writer, in our opinion, is to give too little chloroform.

In the discussion which followed, the speakers in the main agreed with Dr Langstaff's remarks, and drew attention to several interesting points regarding anæsthetics, but it is obvious that the majority of those who were present prefer ether to chloroform.

On Seborrhœa and its Consequences. A Lecture for the London Post-Graduate Course, delivered at the Hospital for Diseases of the Skin, Blackfriars, Nov. 7th, 1893. By JOSEPH FRANK PAYNE, M.D., F.R.C.P., Physician to St Thomas's Hospital. London: John Bale & Sons: 1894.

DR PAYNE has in this *brochure* given a clear and concise account of the present state of our knowledge of seborrhœa, its association with alopecia, with eczema, and with the occurrence of boils and acne. He explains the mode in which it spreads, and expresses his preference for the term "descending" eczema, as applied to the cutaneous catarrh connected with seborrhœa. He illustrates this by describing an "ascending" eczema, taking origin between the toes. The rules for treatment are definite and simple, and the pamphlet is well worth its price—one shilling.

Dermatologische Zeitschrift. Herausgegeben von Dr O. LASSAR. Band I., Heft 1. Berlin: Verlag von S. Karger: 1894.

THE Editor of this new magazine of cutaneous medicine is perhaps best known in this country as the originator of his useful paste, but he has made many other contributions to dermatology.

He has furnished in the opening article an interesting paper on the position and aims of this branch of medicine, which, if it does not contain anything very startling or novel, is at least suggestive. Joseph gathers up what has been written on angiokeratoma and records a case, while Saalfeld describes a curious instance of double nævus verrucosus. Kossel gives an account of a series of cases in which the injection of tuberculin, followed by or combined with surgical measures, produced great improvement, apparently cure, in some examples of lupus. The other contents are mainly pathological.

The Journal is copiously and well illustrated, and if the succeeding bi-monthly numbers maintain the standard of the first, it ought to prove a success.

The Physician's Testimony for Christ. By the late Sir ANDREW CLARK, Bart. With a Preface by Sir DYCE DUCKWORTH.

A very old libel on our profession is "ubi tres medici ibi duo atheisti." Doubtful in its Latinity, it is now inaccurate in its statement, for in our profession Christlike work is very generally the outcome of a robust manly belief in Christianity. Medical men are rarely sectarian bigots, but generally broad and humble Christians. The late Sir Andrew Clark left a strong testimony to the basis of his faith, which he neither concealed nor flaunted; and the Christian Evidence Society have done well to publish it in a neat and attractive form. We understand it is meant that a copy should be sent to every Fellow of the Colleges in Britain.

The Mother's Help and Guide to the Domestic Management of her Children. By P. Murray Braidwood, M.D., F.R.C.S., formerly Senior Medical Officer to the Wirral Hospital for Sick Children. London: The Scientific Press, Limited.

In *The Mother's Help and Guide* Dr Braidwood has collected in one small volume a great many varied and useful pieces of information concerning the management of infants and children in health and sickness. Although, perhaps, there is nothing strikingly new or original in Dr Braidwood's ideas on the subject, they are refreshingly concise and practical, and free from the mawkish sentiment which pervades so many books treating of infancy. The volume is not arranged according to any particular system, such as starting at the child's birth and following it through different stages; but as a detailed account of each chapter is given at the beginning of the book, it can easily be used as a book of reference. The last chapter especially, on "Domestic Management of Children when Ill," which treats of simple remedies in sickness, and "first aid" in cuts, sprains, and burns, will be very helpful in cases where "sending for the doctor" may mean a delay of some hours.

The Art of Living in Australia (together with 300 *Australian Cooking Receipts and Accessory Kitchen Information* by Mrs H. Wicken, Lecturer on Cooking to the Technical College, Sydney). By Philip E. Muskett. London: Eyre & Spottiswoode.

This is a thoroughly practical and readable book. The author's remarks on climate and health, as well as on diet, are admirable, and Mrs Wicken has done her part in first-class style. The book, although intended especially for residents in Australia, might be used with advantage by physicians at home.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIII.—MEETING VII.

Wednesday, March 7, 1894.—Dr R. J. BLAIR CUNYNGHAME, *Vice-President, in the Chair.*

I. EXHIBITION OF PATIENTS.

1. *Mr Cotterill* showed—(*a*) A patient after EXCISION OF TONGUE; (*b*) a patient on whom EXCISION OF THE LARYNX had been performed; (*c*) a patient operated on for INTUSSUSCEPTION OF COLON.

2. *Dr Byrom Bramwell* showed a case of LUPUS and a case of ICHTHYOSIS under THYROID TREATMENT, whom he had exhibited at a previous meeting.

II. DEMONSTRATION.

Dr Clouston, Dr Middlemass, and *Dr W. F. Robertson* gave a Demonstration of the MICROSCOPIC PATHOLOGICAL CHANGES FOUND IN THE BRAIN AND ITS MEMBRANES IN INSANITY, which was illustrated by a series of Diagrams, 55 Sections and Micro-photographs.

The Chairman, in inviting a discussion, remarked that the demonstration had been both a valuable and interesting one. For his own part, he had seen for the first time some things he had only read about, and he now understood them much better, and he had also learned many things which he had not known before.

Dr Batty Tuke said that no one had a better right than he to congratulate Dr Clouston and his colleagues upon the success of their demonstration. He did so, however, almost with a feeling of pain. This feeling was caused by a recollection of how long ago it was since he began to work upon the same subject. He could remember when there was only one man in England and one in Scotland who knew how to make a section, and he had still a vivid recollection of the intense satisfaction he experienced when he first saw a nerve cell in a section cut with his own hand. But whatever feeling of pain he had on this account was compensated for by the realization of the hope he had had thirty years ago when beginning this kind of work. He had never seen finer preparations than those shown by Dr Clouston. Some of them were intensely interesting. They might feel now that the first volume of the atlas of the brain anatomy was closed. They knew now pretty well about the changes in nerve cells. But there was another atlas to make, and one which was the most important of all. If they held that the function of mind was a function of connexions, their next inquiry must be as to how these connexions were destroyed. Of all the specimens that had been shown that night the most insignificant was probably the most important. It was that of colloid degeneration. When he first saw this condition many years ago, he had laid it down to a change in the connective tissue. Bevan Lewis, however, had convinced him that it was due to collections of myeline. The myeline sheath being the protector of the axis cylinder, if it was destroyed the conductivity of the fibres was destroyed also. He observed that Dr Clouston had failed to demonstrate the large cells which Cajal had figured in the external layer of the grey matter. He himself had also failed to see them. In conclusion, he moved an earnest vote of thanks to Dr Clouston for his demonstration.

Dr W. Allan Jamieson asked Dr Clouston if the nucleus of the nerve cell was preserved in puerperal insanity, in which he had said there was frequently complete recovery although there was known to be marked degeneration of the cells? If so, it would exactly correspond to what was known to occur in the case of fat cells when plumpness was restored after a period of emaciation.

Dr Clouston replied that he believed it was so.

Dr Byrom Bramwell said he had great pleasure in seconding the vote of thanks which Dr Tuke had proposed. He had listened with admiration to Dr Clouston's most interesting demonstration. The preparations, drawings, and slides were of great interest and beauty. He was sure that the Society would agree with him in thinking that they were greatly indebted both to Dr Clouston and to his assistants. The amount of labour which the preparation of the drawings and the arrangement of the demonstration had entailed must have been very great. Many of the changes which Dr Clouston had demonstrated were not confined to insanity. He was perfectly familiar with most of the appearances which had been described. He had seen almost all of them in preparations made from brains of persons who were not insane. Some of the pathological appearances were no doubt due to senile changes; others to vascular alterations which occurred in the sane as well as the insane. The great advance in our knowledge of the microscopical appearances (both normal and pathological) of the brain and other parts of the nervous system which had taken place during the past few years was, he thought, largely the result of improved methods. No doubt, in the near future further improvements would result, and our knowledge would be still further extended. Some of the modern methods could hardly, however, be improved upon. The preparations which were exhibited showing the spider cells and their ramifying processes were simply perfect. It was a pity that the half-clearing method, which gave such very beautiful results, and which demonstrated so perfectly the details of the nerve cells and of their processes, and of the minute nerve fibrils, was not permanent.

Dr Leith said that they had received in an extremely complete manner a picture of the intra-cranial changes in insanity that none of them probably had had an opportunity of observing before. He would like to emphasize what had been said as to the great importance of the two sections—the one of the brain of the fully grown fœtus, and the other from a case of congenital idiocy. They were in themselves a striking object lesson, the value of which would be enormous if the condition were a general one in such cases. He understood, however, that it was only in a very small proportion of cases of congenital idiocy that it occurred. The granulations which were seen so frequently in the ependyma were to be regarded as papillomatous and not epitheliomatous. He wished to know if Dr Clouston meant them to understand that the processes of the spider cells passed through the adventitia and media of the arteries to the intima?

Dr Gulland said that he had only the highest praise for the demonstration which Dr Clouston and his assistants had given them. He took exception, however, to Dr Clouston's theory of the function of the spider cells. As he understood that theory, it was that the vascular process of the neuroglia cell was attached to the nucleus or the cell of a capillary or arteriole, which transformed the blood plasma and passed it on through the processes of the spider cell into the nervous matter for the nutrition of the nerve cells. There were several objections of very considerable weight to such a theory. The Deiter's cells were of infrequent occurrence in the grey matter, except in the extreme superficial layer. By far the largest numbers were in the white matter. That went far to show that the old view that they were simply connective tissue cells was the correct one. He had often seen in specimens prepared by Golgi's method half a dozen processes going to a vessel. He regarded them simply as guy ropes. He could not see how Dr Clouston's theory explained the enlargement of the Deiter's cells in diseased conditions of the brain. One would rather expect them to be diminished in such cases. He could not agree, either, with Bevan Lewis's theory that they were scavenger cells. The light in which he himself was inclined to regard subpial felting was that of a simple cirrhosis comparable to cirrhosis in any other organ. The fact that it was so prominent in chronic alcoholism seemed to him to be conclusive that it was a connective tissue, and not a nutritive tissue. All the recent work done by Golgi's method went to show that the protoplasmic processes of the pyramidal cells lay close to the vessels, and through the cell nourished the axis cylinder. He noticed in some of the preparations degenerated cells which he would be very much inclined to place in the category of cells invaded by leucocytes, which Dr Tuke had described some time ago. He would like to hear from Dr Clouston if that occurred to any extent.

Dr Middlemass said that with regard to Dr Gulland's remarks he had himself felt that Dr Clouston's theory of the function of the neuroglia cells would require more study before one could say it was right or wrong. He was not inclined to favour the idea, though it was not one that should be given up without further examination. Probably some part of it might be correct. The normal Deiter's cells existed chiefly under the pia mater and in the white matter. That was one of his difficulties in accepting Dr Clouston's idea. Another point was that if they were nutritive in function they would be prominent in health and not so marked in disease. But in diseased conditions they multiplied. There were other reasons also for his diffidence in accepting Dr Clouston's theory. Regarding Dr Gulland's question about phagocytosis in the brain, his experience was against it, as he had had no satisfactory evidence of its occurrence.

Dr Clouston, in replying, said he wished to express his extreme gratitude for the kindly way in which they had received the demonstration, and to emphasize the fact that to his colleagues Drs Middlemass and Robertson belonged all the credit of it. He had done the talking; they had done the work. He could not but feel that the objections urged against his theory by Dr Gulland and Dr Middlemass were very strong. There were various reasons that had made him dissatisfied with Dr Bevan Lewis's view. What seemed to him to point in the direction of the theory he had expressed as a hypothesis merely was, in the first place, that the vascular processes were attached in large numbers, not merely as guy ropes to the larger vessels, but also to the nuclei of the capillaries, which bulged out in funnel-shaped projections to join them. In this it seemed to him they had an arrangement that pointed to a nutritive rather than a supporting function. In the second place, it appeared, on examining these vascular processes, that they were tubular. He had always been of opinion that the numerous nuclei of the capillary walls had some other function than that merely of nourishing a certain area of the capillary wall around each nucleus. He had a theory that, for example, the nuclei of the capillaries of the liver had a somewhat different function from those of the brain,—that, in fact, the nuclei of the capillaries of any one tissue were different from those of another, and had a sort of organity unity with that tissue. Then taking an area of manifest irritation around a softening, it seemed to him that there was an excessive action in the tissues, and that that excessive action was followed by an enormous multiplication of these spider cells and of the nuclei of the vessels, which pointed to a common trophic function. There appeared no necessity for the multiplication of such mere binding tissue. But if the whole nutritive process of the part was profoundly disturbed, all the nutritive elements of the tissue would be hypertrophied. It seemed to him that in the capillaries, the burr-like Deiter's cells and the fibrillar structure which, passing in all directions from the cells, pervades the whole cortex, they had one structure all hanging together and with one function. The nuclei removed from the blood current the crude material from which grey matter was formed, passing it on through the vascular processes of the spider cells, where it underwent a further process of metabolism, and was passed on and kept moving by the capillary attraction of the fibrils till it reached the nerve cells. It seemed natural that in nervous disturbances the nutritive apparatus should become greatly altered. With regard to Dr Leith's question, he thought that the vascular processes were attached to the adventitia in the case of the arteries. As to the question of phagocytosis, perhaps owing to the mode of preparation employed he had not found facts pointing to leucocyte action upon the brain cells. It was very difficult to say why brain cells should degenerate and disappear. There were certain diseases, such as general paralysis, which one looked upon as a death of the nerve tissue. He was quite certain that this did not take place through the bloodvessels. These were necessarily not the masters but the servants of the brain tissue. All the changes in general paralysis, he believed, must originate in the actual neurine tissue.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LV.—MEETING VI.

Wednesday, 9th May 1894.—Dr A. H. FREELAND BARBOUR, *President, in the Chair.*

Prof. E. Curatulo (Rome) was elected a Corresponding Fellow.

I. *Prof. Simpson* showed—(1.) A VOTIVE OFFERING from Rome representing the UTERUS, and said—Perhaps the most interesting hall in the recent Hygienic Exhibition in Rome in connexion with the International Medical Congress was occupied with objects illustrative of the history of medicine, such as implements from Herculaneum and Pompeii, early works and ancient manuscript volumes on botany, medicine, and surgery, with letters bearing the signature of Bartholin and other famous names. In one press there was exhibited a collection of the votive offerings that people cured of various ailments used to present in token of their gratitude, sometimes to medical men, more frequently to the priests of the temple of the gods or goddesses to whom they thought they owed their cure. In the case of holy wells the offerings were often thrown into the well. Prof. Lanciani, in his latest work on Roman Archæology, tells how the workmen who had to clear out a sulphur spring, called Sorgenti di V. Carello, in 1852, came upon layers of offerings, from coins of the fourth century, through those of the Empire and the family or consular coins of the Roman Republic, on to the unminted bronze sixtants, quadrants, and trients, or shapeless fragments of copper that served as money in the earliest times, and even beyond that to the arrow-heads and celts that had been thrown in by the people of the stone age on the shores of the Lago di Bracciano. The ex-votos found in connexion with the temple-ruins were frequently made of terra-cotta in the shape of some part of the body—eye, ear, breast, arm, foot, etc. Dr Sambon, who had the care of the special collection in the Hygienic Exhibition, is engaged in researches into these offerings, and we may expect to have an interesting account of their varying forms and significance. Through my friend Dr Young I obtained from Dr Sambon one of the ex-votos of which several specimens have been found in connexion with the Temple of Juno at Veir, and with that of Æsculapius on the island of St Bartholomew in the Tiber, and which represent the uterus. It is of terra-cotta, and represents somewhat of the form and size of a uterus a week after confinement, transversely wrinkled, and having attached to it on the left side a body which seems to represent the ovary. It is flat on the posterior surface, in which there is a hole, probably to allow of its being hung on a nail in the temple wall. This specimen represents a single uterus. Some of the objects, however, distinctly represent a double uterus with double orifice. One wonders if the single uterus might be the thank-offering of a woman who had had an ordinary confinement, and the double one the tribute of one who had happily recovered after a twin-birth.

(2.) A preparation of a THREE MONTHS' OVUM, which had been sent to him two days ago by Dr Inglis of Stratford. The patient had suffered from hæmatemesis eighteen months ago, and had been amenorrhœic nine months before the ovum was expelled. Death of the fœtus had taken place apparently from hæmorrhage into the placenta between the third and fourth month. But the abortion was missed, because the decidual membrane retained its vitality and remained vascular and vital till at the usual term of gestation labour efforts were set up for expulsion of the uterine contents. The umbilical cord entered the placenta at one border, so that it represented a miniature battledore placenta.

II. *Dr Aitken Clark* showed a specimen of INTUSSUSCEPTION OF THE ILEUM at the ileo-cæcal valve. The patient was a well-nourished child 9 months old. The symptoms, which were sudden in development, for the first two days of the illness were sickness and vomiting, without any physical signs being made out. On the morning of the third day of illness a little dark-coloured blood was passed by the bowels, the sickness and vomiting became more pronounced, and for the first time the vomits had a fæcal odour, and on palpating the abdomen tenderness and a little resistance were made out in right lumbar region. An operation was suggested, but was not allowed. Inversion and frequent enemata were tried, but were of no avail, and the child died on the evening of the third day of illness. On post-mortem the omentum was found lying obliquely across the abdomen from left to right; the stomach contained several ounces of a pale yellow fluid with a distinct fœcal odour; the small intestines were moderately distended, the large completely collapsed, and an intussusception found as above stated.

III. *Dr Berry Hart* showed—(1.) SUPPURATING KIDNEY from an abdominal nephrectomy; (2.) An OVARIAN TUMOUR illustrating Küster's sign; (3.) TWO FLESHY MOLES.

IV. *Dr J. W. Ballantyne* showed—(1.) A specimen of MONOCHORIONIC OR UNIOVULAR TWINS, WITH PLACENTA, which Dr D. Milligan had kindly given him for examination. The mother, a i.-para, 28 years of age, expected to be confined on September 9th, but was taken with labour pains on the 17th of April. During the first two months of her pregnancy, and again in the week preceding labour, she had suffered greatly from thirst, and during the latter period her abdomen had increased enormously in size. The first twin to be born was accompanied by an enormous gush of waters (hydramnios); it showed the typical paracephalic condition, cysts being present at the sides and back of the neck; the second twin was normal. The placenta was adherent and had to be removed in pieces. The pregnancy may have reached five and a half months. The mother made a good recovery. There was no family history of plural gestations. The paracephalic twin in this instance possessed a heart; but there were certain anomalies of the thoracic and abdominal viscera. Both fœtuses were females. (2.) A FŒTUS WITH A GOITRE-LIKE SWELLING OF THE NECK, which he had received from Dr E. Coleman Moore. The mother was an unmarried primipara, and the fœtus was expelled at about the fifth month of pregnancy. It was of the male sex. An account of the results of the dissection would be given on a future occasion. (3.) A DEAD-BORN INFANT, which had occurred in the practice of Dr T. B. Darling. About eighteen months ago he had examined another dead-born infant from the same patient, and had advised the administration of chlorate of potash and perchloride of iron during the next pregnancy. The result was that the pregnancy went in this instance to the eighth month, *i.e.*, a month later than in any previous gestation. The examination of the infant showed typical hydrops sanguinolentus. There was a large thrombus in the umbilical vein near the insertion of the cord into the placenta. The bones were normal.

V. *Dr Fraser Wright* showed specimen of PERFORATION OF VERMIFORM APPENDIX. The specimen was obtained post-mortem from a boy æt. 12½ years. On Good Friday the patient was out driving and apparently quite well; remained well on Saturday and

Sunday. Felt sick on Monday; had slight abdominal pain on Tuesday morning, which increased during the day, and Dr Fraser Wright saw him that evening. The abdomen was tympanitic and painful to touch, especially in right iliac fossa; temperature 101°·8 F.; pulse 120, small and wiry; *facies* typical peritonitic. *Diagnosis.*—Peritonitis, probably secondary to appendicitis. *Treatment.*—Expectant. Under treatment by hot fomentations and milk and hot water diet the pain eased, and temperature fell next evening to 99° F., with pulse 80. The boy looked and felt very much better. About 2 o'clock next morning he suddenly vomited a large quantity of bile-stained fluid, became very faint, mind wandered, and he died at 9 A.M. *Autopsy.*—Abdomen contained good deal of healthy pus. Intestines matted, especially in region of cæcum. Vermiform appendix swelled to about three times normal size, with a small perforation midway between the base and apex, through which pus was oozing. On slitting up the appendix a round hard mass about the size of a small marble was found. It consisted apparently of inspissated fæcal matter, and was firmly impacted at the base of the appendix. The opening between appendix and cæcum very much narrowed. Ileo-cæcal aperture also contracted to about one-half its normal size, and its margins much thickened, and indicated apparently the result of inflammation. The boy had never made the slightest complaint before this attack.

VI. *Dr Brewis* showed—(1.) A small GANGRENOUS OVARIAN CYST with twisted pedicle; (2.) A BROAD LIGAMENT, showing Gartner's duct prolonged from the outer border as a thin pedicle, about 3 inches in length, and terminating in a small cyst.

VII. *The President* read a paper on EXTRA-UTERINE GESTATION SIMULATING RETROVERSION OF THE GRAVID UTERUS.

Dr Ferguson (of Perth) said he was glad to have been present and heard Dr Barbour's interesting paper. As regards the early clinical history of the case while under his observation, he could only endorse in every detail what had been related, and thanked the Society for giving him this opportunity of doing so.

Prof. Simpson thought the Society was much indebted to the President for the record of this interesting case, more especially in connexion with the case which he had previously communicated to the Society. He (Prof. Simpson) had repeatedly examined that case, and had ever since been cautious in speaking of the facility of diagnosis of the impacted retroflexed uterus. The points of distinction brought out in the President's paper were of great importance, for when we could recognise the extra-uterine pregnancy early, we could interfere in the way of operative treatment with the most hopeful results. By the time Dr Barbour had had the opportunity of eventually operating on the patient her condition was already hopeless.

Dr Brewis thought the narrated case illustrated the value of anæsthesia in cases of doubtful diagnosis. He considered that in this instance a correct diagnosis might have been arrived at in an early stage of the disease. The absence of decidual membrane in Dr Barbour's case added greatly to the difficulty, as its presence was a valuable sign of extra-uterine gestation.

Dr Oliphant said he had seen an extra-uterine gestation behind the uterus so closely adherent as to simulate a fibroid; and, also, it was possible to mistake a fibroid on a pregnant uterus for a uterus and extra-uterine gestation, as in the case of a woman he expected to deliver who had recently had her abdomen opened.

Dr Barbour, in reply, said that he had advisedly described it as a case of extra-uterine gestation simulating retroversion of the gravid uterus, because the case had been seen at an early period, before symptoms of rupture occurred, by Dr Ferguson, who found the swelling at that date distinctly posterior to the cervix. He had limited his observations to the points in physical diagnosis raised by the case.

VIII. *Prof. Simpson* read a paper on CASES OF TORSION OF THE OVARIAN PEDICLE ILLUSTRATIVE OF FREUND'S THEORY, which will appear in a future number of this Journal.

Dr Brewis considered Prof. Simpson's paper a most valuable contribution to the subject of torsion of the pedicle, and the Society was greatly obliged to him for bringing forward his cases in illustration of Freund's theory, which theory seemed of great importance as being a definite and feasible one. Twisting of the pedicle doubtless occurred in more cases than was supposed; in Dr Brewis's experience it had always been most marked in ovarian tumours associated with pregnancy. In the case which Dr Brewis showed to the Society to-night, the torsion had been so great as to destroy the vitality of the pedicle and likewise of the tumour.

The President thought the law of spirality in growth was not applicable to ovarian tumours, because the pedicle was not an integral part like the branch of a tree, but a structure formed artificially during growth. The law of spirality might influence the growth of a structure like the Fallopian tube, but he failed to see its applicability to an ovarian pedicle.

Prof. Simpson, in reply, taking up first the point referred to by the President, indicated that Freund's very contention was that torsion of the pedicle to a certain extent was the rule, and was found in every case where there was no counteracting condition, and would be often observed if ovariotomists would take time, before securing the pedicle, to examine its condition. Though the pedicle was usually composed of various elements, these all were, according to Fischel, in a state of axial rotation in their physiological condition, and all in the same direction on their respective sides, so that when the pathological development occurred they retained their normal torsion as they underwent elongation. He (Prof. Simpson) was glad Dr Croom had reminded them of his observation of the tendency of the torsions to occur at the date of the escape of the ovarian tumours from the pelvis, for whatever might be the condition causing the exaggerations of the rotation, it was precisely at that time, on Freund's showing, that the normal torsion was free to manifest itself.

IX. *Dr Halliday Croom* read a paper on SACCULATED UTERUS.

Prof. Simpson thanked Dr Croom for his interesting communication. Although he could not say he had actually met with a case of the description, he was quite prepared to admit that such did rarely occur. He thought that by having the subject brought forward in this practical manner it might be the means of causing others to relate any similar case they might have met with, and thus give a fillip to the consideration of these rare and interesting conditions.

Part Fourth.

PERISCOPE.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. BALLANTYNE, M.D., F.R.C.P. Ed., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, and on Midwifery and Gynæcology, School of Medicine, Edinburgh.

THE ETIOLOGY AND OPERATIVE TREATMENT OF VULVITIS PRURIGINOSA.—After a few remarks on the relation of pruritus vulvæ to kraurosis vulvæ, Sänger proceeds to consider the etiology of the former affection. He divides the known causes into two groups—the endogenous and the exogenous. Amongst the former he places—(1), Hæmato-chemical states, due to such diseases as icterus, chronic nephritis, and diabetes mellitus, and to the circulation in the blood of morphia, alcohol, and iodoform; (2), congestive conditions from overfilling of the pelvic veins from heart disease, retroflexion or tumours of the uterus, pregnancy, and hæmorrhoids; (3), hæmatogenous skin affections, such as erythema, urticaria, herpes, and some forms of eczema. Amongst the exogenous causes are grouped—(1), The secretory-chemical, due to altered secretion of the vulvar glands, wetting of the parts with normal or altered urine, disordered secretions of the vulva, vagina, and uterus, and catarrhal or purulent discharges from the rectum; (2), the parasitic, due to such animal parasites as pediculi and thread-worms, or to such vegetable ones as leptothrix, oidium albicans, micrococci, gonococci, and streptococci; (3), the mechanical, such as masturbation; and (4), thermic causes, as in the pruritus æstivus or hiemalis. In most cases of vulvar pruritus the removal of the cause will be sufficient to remedy the condition, but in a small group of instances operative interference will be needed. Sänger records two cases in which, in addition to repairing the perineum, he practically removed the external genitals with most satisfactory results. He holds that the partial or complete extirpation of the vulva is a perfectly legitimate operation, which ought to be more often employed in chronic and not otherwise curable pruriginous vulvitis. The clitoris may also be removed in old women, but in young women it is best to be content with the partial operation.—*Centralblatt für Gynäkologie,* No. 7, 1894.

CONTRA-INDICATIONS TO THE SCHULTZE METHOD OF ARTIFICIAL RESPIRATION.—In a short paper B. S. Schultze discusses the question—Whether a fracture of the clavicle should be considered as a contra-indication to the swinging of a deeply asphyxiated new-born infant? After a reference to the fatal case reported by Heydrich, and to the conclusions arrived at by Körber and Meyer, he records a case in which, notwithstanding the presence of such a fracture, a still-born infant was safely resuscitated by the Schultze method of swinging. He thinks the whole danger may be due to taking too firm a grasp of the shoulders, and does not regard the fractured clavicle as a contra-indication to the method of resuscitation when this is properly carried out.—*Centralblatt für Gynäkologie,* No. 8, 1894.

SYMPHYSIOTOMY.—As was natural, symphysiotomy formed one of the subjects discussed at the recent Congress in Rome, and as was equally appropriate, Morisani gave his latest views on the subject. The conclusions which he has now arrived at are as follows:—Symphysiotomy is an operation which is fully justified both in theory and by clinical experience. By its help a full-time, well-developed fœtus may traverse a pelvis narrowed within the limits of 6·7 cms. to 8·8 cms. When, however, the fœtus is dead or nearly so, it is not a good operation. As a rule, the operation should be performed at term, when labour has commenced and the process of dilatation advanced. The combination of premature labour with symphysiotomy must not be accepted in the existing conditions of practice; but one may in certain cases have recourse to symphysiotomy along with embryotomy when the fœtus is dead. The operative procedure recommended by Morisani is the simplest and most certain. One may divide the interpubic cartilage from below upwards or from above downwards provided one divides the subpubic ligament. The employment of forceps after symphysiotomy is useful in a very great number of cases, but is not indispensable. Suturing the bones and applying a retentive apparatus are not essential proceedings. It suffices to suture the soft parts, and to apply a bandage. Symphysiotomy ought only to be compared with embryotomy when the fœtus is alive, and deserves the preference in all cases. It is destined to take the place of the Cæsarean section by choice. It is matter for debate whether it is better to induce premature labour at the beginning of the ninth month, or to wait till the end of pregnancy and perform symphysiotomy; but at a less advanced period of pregnancy, symphysiotomy at term is to be preferred. Ischio-pubiotomy is quite different from the pubiotomy of Aitken and Galbiati; it should be called after its inventor the operation of Farabeuf, and it is a very valuable operation in pelvic contractions caused by the ankylosis of one of the sacro-iliac synchondroses (Naegele's obliquely contracted pelvis). The alleged disastrous results of symphysiotomy have been observed only when it has been performed under the limits of its indication; and we should look for the cause in the period of labour at which it was carried out, in the manner of operating, in previous lesions of the genitals, or in special conditions of the patient. The death of the fœtus must be attributed either to a too long delayed intervention, to accidental circumstances, or to the accessory means used to secure its extraction.—*Annales de Gynécologie*, April 1894.

THREE YEARS' EXPERIENCE WITH THE ELECTRICAL TREATMENT OF FIBROID TUMOURS OF THE UTERUS.—Dr W. L. Burrage gives the results of the electrical treatment in forty cases of uterine fibroids that have been under his care. Full details of these are given, and the author draws the following conclusions:—Hysterectomy is contra-indicated in most cases of fibroids, for it unsexes the patient, and on account of its high mortality. Electricity is the best therapeutic means at our disposal to combat pain, hæmorrhage, and impaired health and strength. Intra-uterine galvanism is most advisable. We must not look for a permanent reduction in the size of the tumour. Galvanism—vaginal, intra-uterine, or by puncture—does not cause abscesses or adhesions, and treatment by electricity after the Apostoli method is absolutely safe. Every case of fibroid tumour of the uterus should be under competent medical observation, because of the danger of malignant degeneration, kidney disease from pressure on the ureters, complications during pregnancy, and the liability to the occurrence of pain and hæmorrhage, and functional nervous disorders, especially during a delayed and protracted menopause. Burrage does not report any miracles in the way of the disappearance of tumours, and it is from papers such as this that the ultimate position of electricity in the treatment of fibroids must be decided.—*American Journal of Obstetrics*, March 1894.

GYNECOLOGY AND OBSTETRICS AMONG THE ESKIMOS.—In "An Informal Talk to the Brooklyn Gynecological Society" Dr F. A. Cook gave some of his medical experiences among the Eskimos. The Eskimo girls begin to menstruate when 19 or 20 years old, but are married when 12 or 13 years of age. They do not menstruate at all during the long Arctic night. They are fairly prolific,—average three children to each family. There is no bond of marriage unless a child is born, but very few of the women are sterile. An Eskimo woman is locked up alone when about to have a child, and practically manages the whole business herself. Dr Cook never was present at a confinement. Many women die from child-birth. Very few women abort, but those who do are regarded with ridicule. About 105 female children are born to every 100 male. Infantile mortality is small compared with that in the United States. The child is nursed for five or six years by the mother. Twins are rare. Dr Cook heard of no cases of pelvic or abdominal tumours.—*Brooklyn Medical Journal*, March 1894.

MENOPAUSE—NATURAL AND ARTIFICIAL.—Dr A. W. Johnstone tells the New York State Medical Society that he is sure that the ovary has little more to do with menstruation than the liver. There is a menstrual centre—somewhere—which is probably mixed, being composed of cerebro-spinal and sympathetic nerves. To the uterus, ovaries, and tubes, nerves pass, and the great thing in inducing a premature menopause is to destroy these nerves as completely as possible. A woman's normal state is pregnancy. During the child-bearing age she is prepared to take care of another individual besides her own personal economy; but that stranger failing to come, the material must be got rid of, and Nature does it in two ways: by increased oxidation, and by the passing off of the hotbed lining of the uterus where it was to have been nourished.—*New York Journal of Gynecology*, April 1894.

COINCIDENT INTRA-UTERINE AND EXTRA-UTERINE PREGNANCY.—Dr B. C. Hirst narrates an interesting case in which a woman aborted at the fourth month, and four weeks afterwards Dr Hirst opened her abdomen, for abdominal pain, high temperature, etc., and found a tubal gestation sac of from six to eight weeks' development without any embryo in it. The evidence in this case was not very conclusive, for only the mother saw the fœtus and placenta of the abortion.—*Philadelphia Medical News*, March 31, 1894.

OCCASIONAL PERISCOPE OF THE DISEASES OF CHILDREN.

By JOHN THOMSON, M.D., F.R.C.P.Ed., Extra Physician to the Royal Hospital for Sick Children; Lecturer on Diseases of Children, School of Medicine, Edinburgh.

GAVAGE (FORCED FEEDING) IN THE TREATMENT OF ACUTE DISEASES OF INFANCY AND CHILDHOOD.—Dr L. Emmett Holt has written a most interesting and practical paper on this subject. He shows that while gavage is a very simple procedure, it is one of the most valuable of our therapeutic measures at this time of life. The technique is very simple. The ordinary apparatus used for stomach-washing is all that is required, namely,—a funnel, 18 inches of rubber tubing, a soft rubber catheter, and a few inches of glass tubing for connexion. The catheter should have a double eye—No. 14 American scale (11 British) is the best size for infants under six months, and about No. 17 (13-14 B.) for older children. A 4-ounce funnel is large enough for infants, while for older children it is an advantage to use one holding 6 or 8 ounces. The child is placed flat upon its back in its crib, and the head steadied by an assistant. The tongue is depressed with the left forefinger, and the catheter, previously oiled, is pushed rapidly down the pharynx until 9 or 10 inches have passed the lips. The funnel is now raised high in the air for a few moments to allow gas from the stomach to escape. The food is poured into the funnel and rapidly runs into the stomach. As the last of the food leaves the funnel, the catheter is tightly pinched and quickly withdrawn. This last step is an important one, in order to prevent trickling of food in the pharynx, which may provoke vomiting. Sometimes the food remains in the funnel, and will not run into the stomach. This is not ordinarily from blocking of the eye of the catheter by mucus, but from gas in the tube. In a few moments this generally rises to the surface of the liquid, and then the food flows readily. If regurgitation of the food takes place it is generally immediately after withdrawing the tube. In many cases it may be prevented by allowing the gas to escape from the stomach before putting the food in, and in others by holding the jaws separated for a few moments after the catheter has been withdrawn. In young infants no gag is required, but in older children one is quite necessary, since otherwise they may bite the catheter in two. Nurses readily learn to do gavage, and soon do it very quickly. Its uses may be briefly stated as follows:—(1.) In premature infants in connexion with the use of the incubator. (2.) In controlling persistent vomiting in very young infants where the vomiting occurs partly from habit and partly from exaggerated pharyngeal reflex. (3.) In acute diseases where for any reason children refuse all food, or struggle violently against everything that is offered them; for example, in very severe cases of scarlet fever, diphtheria, broncho-pneumonia, typhoid and empyema. (4.) In serious brain disease where the patient cannot be fed by ordinary means; for example, in tubercular meningitis, in chronic meningitis, and in many other diseases where delirium or coma is a symptom. In the adult, when food is refused by the stomach we may have recourse to rectal alimentation; but in little children this is extremely unsatisfactory, and in most cases an entire failure. When gavage is compared with holding the nose and forcing the child to swallow, anyone who has seen the two things done will have little difficulty in deciding which is easier. In older children, where 6 or 8 ounces are given at a time, gavage need not be repeated more than once in five or six hours. In infants the intervals should be one hour longer than the customary interval of feeding. Stimulants, medicine, everything that is to be given, may be poured in at once. In infants who are having gavage it is generally advisable to wash out the stomach at least once a day before feeding.—*New York Medical Record*, April 28, 1894.

THE TREATMENT OF INFANTILE CONVULSIONS.—M. Simon gives the following indications:—(1.) *Empty the bowels and stomach.* This is the first indication, because the convulsions are caused in four-fifths of the cases by indigestion or obstinate constipation; and it is best carried out by giving the child at once a large warm enema containing oil, glycerine, or salt, and afterwards, when it is quieter, making it vomit. (2.) *Calm the nervous system.* For this purpose ether or a few drops of chloroform should be given immediately to inhale. Then, when the purgative enema has acted, the following may be injected per rectum:—Tincture of musk, 20 drops; chloral, 7½ grs.; warm water, about 2 oz. It should be given in three or four parts, so that it may be readily retained and absorbed. These doses are suitable for a child of six months; at nine months 11 grains of chloral may be given, and 15 grains to a child of one year. Small doses of bromide of potash and tincture of musk should be given by the mouth also. 3. *Cutaneous counter-irritants should be used in specially obstinate cases* as a last resource. One, or even two or three, warm mustard baths may be given till the skin is reddened, or a blister may be applied for three hours to the nape of the neck. 4. *Various indications are furnished by the cause of the convulsions.*—If there is no indigestion, constipation, or enteritis, one should examine for cutaneous irritation, for foreign bodies in the nose or ear, for retention of urine, hernia, undescended testicle, etc., and very specially for uræmia. If uræmia be present, cupping over the kidneys, hot-air baths, leeches over the mastoid processes, and, in severe cases, blood-letting, are indicated. M. Simon advocates strongly that the physician should remain with the patient and apply the remedial measures himself, as otherwise they are apt to be very inefficiently carried out.—*Gaz. des Hôpitaux,* February 22nd, 1894.

THE TREATMENT OF OBSTINATE CASES OF NOCTURNAL ENURESIS. —Children who have been treated for enuresis for a long time and in many different ways, without receiving more than a slight temporary benefit, are not infrequently brought to the physician. In such cases Dr Donald MacAlister recommends "courageous overdosing" with atropin, which he finds often results in a speedy and permanent cure. Although the doses he recommends are large, the secondary effects of the drug are never alarming, and are only slightly inconvenient. The addition of strychnine is useful, probably because it diminishes the depressing effect of the large doses of atropin, and increases the sensitiveness of the vesical centres to reflexes from the bladder walls. For a boy of 14, who had resisted all treatment for years, he ordered the following—

℞ Liq. atropinæ sulphatis, . . ʒiss.
Liq. strychninæ hydrochloratis, ♏xlv.
Syrupi aurantii, . . . ad ℥j.

Of this mixture he was to have five drops in a tablespoonful of water at 9 P.M. No drink was to be taken after 6 P.M., and at 10 P.M. the boy was to go to bed after emptying his bladder. He was to be wakened and made to pass water at 12 and 6 A.M. After three nights he was to increase the dose to ten drops, and after other three, to fifteen drops, and so on. This treatment was carried out, and the drops were increased until at last he was taking sixty at a time. The dose was then diminished steadily by ten drops every three days, and after nine weeks the treatment was discontinued. The enuresis ceased, and never returned.—*Practitioner*, May 1894.

THE VALUE OF OPIUM IN LARYNGEAL OBSTRUCTION.—It is well known that the dyspnœa of children suffering from simple or diphtheritic croup is markedly increased by emotional excitement, and also that they breathe more easily when asleep. These facts suggested to Dr Carl Stern the advisability of trying opium in such cases; and after some years' experience of its use, he strongly recommends it. The effect of opium in a case of laryngeal obstruction is to allay the tendency to cough and to make the breathing quieter and more regular, and this naturally results in lessening of the cyanosis and of the dyspnœa. In some cases the improvement is such that Dr Stern believes that tracheotomy becomes unnecessary when without opium it would have been inevitable. In many cases, of course, tracheotomy has to be performed in spite of it; but even in these he thinks it is often of great service, because it lessens the risk of deferring the operation until the surgeon arrives and the necessary preparations are made. Also, children under the influence of opium require less chloroform. —*Therapeutische Monatshefte*, May 1894.

SURGICAL PERISCOPE.

By KENNETH M. DOUGLAS, M.D., F.R.C.S. Edin.

RELATION OF FLOATING KIDNEY TO INTERMITTENT HYDRONEPHROSIS.—According to M. Tuffier, this relation is an intimate one, inasmuch as the falling forwards of the kidney causes a twist of the ureter, with increased tension in the pelvis of the kidney and resulting distention. This argument he bases upon experiment and upon clinical observations. The mechanism of intermittent hydronephrosis depends on various factors,—(1), on the mobility and variability of the twist of the ureter, according to the altered position of the kidney from changing posture of the body, though after a time a constriction (real or apparent) is to be noticed at the site of the twist; (2), on the fact that when the kidney is fixed, the distention, after reaching a certain point, causes fluid to be forced past the obstruction, and pressure thus being lessened, accumulation of fluid again begins. Tuffier admits that many cases of floating kidney never develop hydronephrosis, and in many which do there are no intermittent crises. In his remarks on treatment he advocates nephrorraphy as the operation of choice (nine satisfactory cases noted), unless the tumour is very voluminous, placing the suture in the lower segment of the kidney tissue to ensure removal of the ureteric curve; after operation the patient should lie for three weeks on the back, with the pelvis raised. When the tumour is very large, puncture may occasionally prove useful (from the lateral lumbar region); but if the sac be thickened and inelastic, transperitoneal nephrectomy is necessary (five cases with no mortality recorded in the paper). Lumbar nephrotomy may be performed as a palliative operation when uncertainty exists as to the state of the other kidney. M. Tuffier is careful to insist on the strong justification for conservative treatment, from the long period during which a hydronephrotic kidney will discharge its functions.—*Annales des Maladies des Organes Génito-Urinaires*, Jan. 1894.

CLASSIFICATION OF PERITONITIS.—Treves, in the Lettsomian Lectures, dealing with the causes of peritonitis, says that the following classification of peritonitis according to its cause appears to be justified by our present knowledge of the subject:—(1.) *Peritonitis due to Infection from the Intestine.*—Under this heading are included most cases of peritonitis associated with hernia, with intestinal obstruction, and with perforation; peritonitis due to any form of ulceration of the bowel; to enteritis; to cancerous growths of the gut, and to troubles in the appendix. There will also be included peritonitis due to inflammatory changes in the biliary canals, and some forms of peritonitis following upon operation. The micro-organism which is usually found associated with these different forms of peritonitis is the bacterium coli commune. (2.) *Peritonitis due to Infection from Without.*—This division will include puerperal peritonitis, peritonitis consequent upon inflammatory troubles in the genital organs or in the parietes of the abdomen, and some forms of peritonitis following upon operation. The micro-organisms usually associated with the varieties considered under this heading are pyogenic cocci, and notably the streptococcus pyogenes. (3.) *Peritonitis due to the Pneumococcus.* (4.) *Tuberculous Peritonitis.* (5.) *Peritonitis of a Doubtful Nature.*—Under this purposely indefinite heading it will be convenient to place—(*a*) Peritonitis due to irritants; (*b*) forms of the trouble reputed to depend upon rheumatism, gonorrhœa, syphilis, Bright's disease, and alcoholism; and (*c*) peritonitis met with in the newly born.—*Med. Press and Circular*, Feb. 14, 1894.

TREATMENT OF HYPOSPADIAS IN THE FEMALE.—Dr Bitner contributes a paper on this subject to the *Revue des Chirurgie de Varsovie* (2nd fasc.). A case is described, which occurred in the practice of Dr Krajewski, of a girl, aged 17, who had suffered since she was 7 from incontinence of urine, and in whom it was found that the posterior urethral wall was absent for the space of 1½ centimetres from the meatus. Dr Krajewski performed an operation after the method of Gersuny. Dissecting out the urethra to the neck of the bladder, he sutured the gap in the wall of the canal, twisted it round upon the longitudinal axis, and fixed it by sutures; the result was permanent relief from symptoms. The notes on this case are followed by remarks upon the general subject, and a report of the literature. The author, contrary to the opinion of Winckel and Seligman, affirms that the incontinence depends, not upon the degree of hypospadias, but rather upon the development of the constrictor vaginæ muscle, and therefore holds that a simple plastic operation on the urethra will not remedy the defect and relieve symptoms.—*Annales des Maladies des Organes Génito-Urinaires* (*Revue des Journeaux*), Jan. 1894.

Relation of the Teeth to Empyæma of the Maxillary Sinus.—Dr Fletcher (Cincinnati) has made an examination of 100 skulls with the view of determining this relationship, and from this research, and after some years of experience, he has been led to hold that the affection of the teeth is more often secondary to the antral disease than its precursor; in only 8 per cent. of 57 possible cases among 100 skulls could he determine that antral trouble had come from the teeth; in only one case among 224 which during ten years he had treated for diseases of upper molars did Dr Fletcher find evidence of pus in the antrum, this being the only certain case of empyema of the antrum caused by the teeth that he has seen; he believes that antral trouble is more to be attributed to intra-nasal disorders.—*Journal of the American Medical Association* (Chicago), Dec. 30, 1893.

Spinal Caries.—Dr Alexander contributes a valuable paper on the subject of tubercular spinal disease in the *Liverpool Medico-Chirurgical Journal* for January 1894. The paper is illustrated by twenty-four plates and notes upon the cases, and deals with the subject with great breadth of treatment. It is remarked how long in these cases life and *health* may be maintained, and how it is through interference with the viscera near the spine that life is chiefly threatened. In only one among fifty specimens was a piece of bone found to press upon the cord, and in no case did the curvature *per se* compress it; indeed, in many instances the canal is enlarged by the destructive process. Speaking as to treatment, Dr Alexander advocates fixation by plaster-of-Paris jacket, applied after sufficient suspension to extend without putting strain on the spine; children, he thinks, should during the application lie prone in a Davy's hammock. If abscess forms it should be allowed to dry up under treatment by rest, and when this does not occur is to be opened by the thermo-cautery by a large wound, drainage being rarely used; great attention and frequent dressing are essential to prevent sepsis. Incision, with scraping out, and immediate suture he regards as having no advantage over aspiration, and not a satisfactory means of treatment. Attacking the seat of the disease with the view of removal is too uncertain a means of cure to be recommended, though loose sequestra should be taken away. Scraping the abscess or sinus is deprecated, as placing the patient in danger of general systemic infection.

Part Fifth.

MEDICAL NEWS.

The Boylston Prize.—We are gratified to notice that the University of Harvard, U.S.A., has recently awarded this prize to Dr Norman Walker, of the Royal Infirmary, Edinburgh, for an essay on "Cancer of the Skin."

The Russian Government has officially regulated medical fees. There are three classes: First, 5 roubles to be paid by capitalists, landed proprietors, manufacturers, and merchants in large cities; second, 3 roubles to be paid by professional men and employees of the seventh and eighth classes; third, 30 kopeks by all others, including villagers.

Messrs Burroughs, Wellcome, & Co. have forwarded a sample of a new iodine preparation, "Loretin," made in Germany. Its scientific name is simple and expressive—Iodo-oxyquinolinesulphonic acid—and it is hoped that it may prove an efficient substitute for its interesting relative Iodoform. If its claims are still further substantiated by experience, it should supplant iodoform, as it is odourless; and while equally an antiseptic, produces no toxic symptoms if absorbed, nor causes any local irritation. The name Loretin, adopted for the sake of convenience, may help to perpetuate the memory of the famous Italian surgeon, whose tragic death was a loss not only to his native country, but to the whole profession of medicine.

Referring to the Medical Belt humbug in England, the editor of the *Medical News* writes:—"If there were but a single honest newspaper in the United States, what field would be open to it?" We have lately taken the trouble of looking over the advertisements published by twenty-four leading daily and monthly papers, and we find in all, without exception, quack advertisements. Is it not time, especially for the religious newspapers, to put a stop to this? How can they who profess to lead mankind to salvation at the same time lead their bodies to ruin?

OBITUARY.

THE LATE DR ROBERT BOWES MALCOLM, F.R.C.P. Ed.

Probably many of the profession in Edinburgh were hardly aware that this esteemed practitioner still survived at the age of 86, as it is now nearly seven years since failing health caused his retirement from the active duties of his profession, and two or three years ago he left his house in George Street, where he had practised for nearly two generations.

An Englishman by birth, he was a son of the late Major John Malcolm of the Hon. East India Company's service. After a good education in the North of England he graduated M.D. in Edinburgh University in 1831, and became a Fellow of the Royal College of Physicians in 1840. He married very early in his career a daughter of the famous Dr John Thatcher, who was in his day second only to the famous Dr James Hamilton as an obstetric physician in Edinburgh. Aided by this excellent introduction, and by his fine presence, courtly and dignified manner, and much real knowledge of his special branch, Dr Malcolm took rapidly a high position in Edinburgh in his chosen branch of obstetric work. He was entrusted by the old Edinburgh family practitioners who did not attend labour cases with the conduct of those special emergencies in the families they wisely guided in every other difficulty. Dr Malcolm was loyal, and retired when his work was done. He recognised that such specialism in practice in the case of patients of the better classes who could afford the luxury of two doctors was most wise and safe. Would it were done now, and we would hear less of practitioners who attend with an equal mind scarlet fever and parturition, the medical wards of a general hospital and the lying-in room.

Dr Malcolm wrote little, and did not teach. One or two articles on his own speciality in this Journal many years ago were his chief contributions to the literature of his profession. His relationship to Lady Fettes pointed him out as a suitable candidate for the post of Physician to Fettes College. This post he held, assisted to a considerable extent by the late Dr J. D. Gillespie, for many years.

Somewhat old-fashioned, but exceedingly neat in his dress, courtly and calm in manner, precise and methodical in many of his personal habits, Dr Malcolm was a well-known figure, not only in the street and at his club, but could daily be seen walking round Arthur's Seat from the St Leonard's gate to Holyrood, past Dunsappie Loch, in winter as in summer, with his carriage not far off in case of a shower. Mrs Malcolm died many years ago. They had three children,—one son, lately surgeon-major of the 9th Lancers, and two daughters, one of whom survives her father, whom for many years she had cared for most tenderly. Sir Thomas Grainger Stewart was his most kind and attentive physician.

THE LATE ROBERT JOLLY, M.D., F.R.C.S. ED.

EDINBURGH graduates of thirty years' standing will hear with much regret that Robert Jolly is dead, while still a comparatively young man, though he had attained the position of Senior Surgeon to the General Hospital, Birmingham. He died at Bournemouth, after a protracted illness, on Saturday, 9th June. An Edinburgh graduate of 1862, Jolly's was a marked personality even in the later years of his student life. He believed utterly in the old maxim, that "*frequens in nosocomiis exercitatio*" was the best training, and the residents of 1860-62, many of whom now survive in high positions in Edinburgh, will remember what an active, useful dresser and clerk Jolly was, how certain he was to turn up at odd hours and in emergencies at night. Railway accidents and primary amputations, especially in Gillespie's wards, were his favourite haunts. He had a special love for surgery, and much aptitude; so he got the post of Resident to Dr Gillespie, which he filled with much zeal and success. He afterwards was Demonstrator of Anatomy in Surgeons' Hall School of Medicine, and then left Edinburgh for Birmingham, where he became House Surgeon at the Queen's Hospital. This was a post of considerable importance and trust, and involved much responsibility. Having held this with acceptance for five years, he was appointed Assistant Surgeon to the General Hospital, and there he went through every stage of promotion till he became Senior Surgeon. He soon attained to a large surgical practice, the claims of which prevented him from devoting so much of his attention to teaching as he would have liked. He was for many years Police Surgeon, and his courtesy and kindness to the men under his care made him much beloved. To a thorough knowledge of and love of his profession, Jolly added a cheerful encouraging manner and a frank confidence which made every one see that he was a pleasant, trustworthy man, who expected similar frankness and pleasantness in others. Few men of his years were more universally known and liked, and his worthy chief, Dr Gillespie, placed the most implicit confidence in his care of the wards. His premature death, for he cannot have been more than half through the fifties, will call up to many of his friends and comrades memories of old days in the old Royal Infirmary of Edinburgh.

THE LATE DR CARLYLE OF LANGHOLM.

It was with a feeling of very sincere sorrow that we received the announcement of Dr Carlyle's death, which took place, after a short illness, on the 29th of May. For some years his health had been somewhat uncertain, but he was able to do a little work till the end of April, when his health showed rapid signs of failure. His condition assumed a serious aspect about the 22nd of May, when he was obliged to keep his room. Although somewhat prepared by his illness, the news of his death was received with deep sorrow. For fifty-two years he had practised the profession of medicine in Langholm, and during that time had endeared himself to all classes, so that when death closed his long and honourable career, it was felt that a friend had passed away who could never be replaced.

Dr Carlyle was born at Waterbeck, near Ecclefechan, in 1820. He studied medicine at the University of Edinburgh, where he completed his four years' course, and received the degree of Doctor of Medicine in 1841, at the age of twenty-one. In September 1842 he came to Langholm as successor to Dr Little, and settled down to what he made a very extensive practice,—reaching from Liddlesdale on the one hand to Eskdalemuir on the other. He made an ideal country doctor. A more than ordinarily strong healthy physique made the work, which would have been a burden to most men, a pleasure to him. No call found him unwilling to attend to it, however bad the weather, however late the hour, or however long the journey. We have often heard him relate his experiences of long, cold, wet, and dark rides over roads which were mere tracks, or which were rendered dangerous by steep declivities. As a young man—and, indeed, until age prevented him—he did much of his country work in the saddle; and his figure mounted on his well-bred mare "Minx" will be a pleasant memory to the senior part of the population. He was a staunch Conservative, though born of a Liberal family; he held his opinions without bitterness; never being a keen politician, Conservatives and Radicals were alike his friends. He was among the first to recognise the importance of the Volunteer movement, which he joined as a private in 1860, and from which he retired in 1890 with the rank of Surgeon-major.

Twice during his life the appreciation of him by his patients and friends took tangible form. In 1872, after thirty years' work, he received the presentation of a handsome silver epergne and tea-tray, with a sum of 300 guineas; and again, when he had completed fifty years' work, there was a very general wish expressed that his portrait should be painted. Sir George Reid, *P*.R.S.A., was asked to undertake it. The picture, which is admirable as a work of art as well as a portrait, will now be hung in the Town Hall, where it will be the fertile source of many happy memories of a man who was so greatly loved and so deeply esteemed.

Dr Carlyle was physically gifted beyond most men. Tall, of perfect proportion and commanding air, his appearance at once attracted attention wherever he was; but great though his personal attractions undoubtedly were, it was not till you came into touch with the man himself that you felt the full force of his fascination. He retained to the last a certain boyish love of fun and appreciation of merriment which was exceedingly attractive. His smile was a thing to remember,—so sweet, so gentle, and so kind. He was good himself, and believed all men the same. His judgments of other people's actions were most lenient, and he never spoke ill of anyone, nor allowed anyone to do so in his presence. It is only those who knew him best who can fully appreciate his deeply sympathetic nature, his intense kindliness of heart and tenderness of speech, his devotion to his patients, his utter disregard of self, his modesty, his absolute honesty of purpose and action, his never-failing courtesy to young and old, and his entire absence of self-seeking. To see him was to admire him; to know him was to love him; to lose him is to mourn our best and dearest friend. "Take him for all in all, he was a man; we will never see his like again."

THE LATE DR ALEXANDER WILSON OF MID-CALDER.

This esteemed practitioner, who died on June 9th, has practised with acceptance for more than twenty years in Mid-Calder and the surrounding district. An Aberdeenshire man, he obtained the thorough grounding in classical literature that Aberdeenshire is proud to give her hard-headed sons. After a full curriculum in Arts he entered the Medical School of Aberdeen University, and after a distinguished undergraduate career graduated with highest honours both in Medicine and Surgery. After settling in Mid-Calder, his cheerful manner and sympathetic nature aided him in obtaining a large practice, though he had the formidable rivalry of Dr Walter Watson, who had been established in practice as successor of the late Dr Dick. Dr Wilson died from a sharp attack of broncho-pneumonia. He was a staunch supporter of the Church of Scotland, and a Conservative in politics. He is survived by his widow.

PUBLICATIONS RECEIVED.

Theodore Dyke Acland, M.D.,—A Collection of the Published Writings of Sir Wm. Gull, Bart., M.D. The New Sydenham Society, Lond., 1894.

An American Text-Book of Gynecology, Medical and Surgical, for Practitioners and Students. Edited by J. M. Baldy, M.D. The F. A. Davis Co., Philadelphia, and F. J. Rebman, Lond., 1894.

An American Text-Book of the Diseases of Children, by American Teachers. Edited by Louis Starr, M.D., and T. S. Westcott, M.D. W. B. Saunders, Philadelphia, and F. J. Rebman, Lond., 1894.

Army Medical Department Report for year 1892, with Appendix. Vol. 34. 1894.

Horatio R. Bigelow, M.D., etc.,—An International System of Electro-Therapeutics: for Students, General Practitioners, and Specialists. The F. A. Davis Co., Philadelphia, and F. J. Rebman, Lond., 1894.

Prof. Ch. Bouchard,—Lectures on Auto-Intoxication in Disease. Translated, with a Preface, by Prof. Thomas Oliver, M.A., M.D., etc. The F. A. Davis Co., Philadelphia, and F. J. Rebman, Lond., 1894.

P. Murray Braidwood, M.D., F.R.C.S.,—The Mother's Help and Guide to the Domestic Management of her Children. The Scientific Press, Limited, Lond., 1894.

Judson S. Bury, M.D., F.R.C.P.,—Clinical Medicine: A Manual for Students and Junior Practitioners. Charles Griffin & Co., Limited, London, 1894.

Catechism Series,—Physiology: Part IV. Digestion. E. & S. Livingstone, Edinburgh.

Prof. David W. Cheever, A.B., M.D.,—Lectures on Surgery. Damrell & Upham, Boston, 1894.

Clinical Lectures on Subjects connected with Medicine and Surgery. By various German Authors. The New Sydenham Socy., Lond., 1894.

Examination Questions in Practice of Medicine, with Answers. Part 2—Skin Diseases. E. & S. Livingstone, Edinburgh.

Fifth Annual Report of Derby Borough Asylum, 1893.

Ellen M. Firebaugh,—The Physician's Wife, and the Things that Pertain to her Life. The F. A. Davis Co., Philadelphia, and F. J. Rebman, Lond., 1894.

Arthur af Forselles,—Die Durch Eitrige Mittelohrentzündung verursachte Lateral-sinus-Thrombose und deren Operative Behandlung. Aug. Hirschwald, Berlin.

Percy Frankland, Ph.D., B.Sc., F.R.S., and Mrs Percy Frankland,—Micro-Organisms in Water: Their Significance, Identification, and Removal. Longmans, Green, & Co., Lond., 1894.

Dr med. J. Grossman,—Die Bedeutung der hypnotischen Suggestion als Heilmittel. Deutsches Verlagshaus Bong & Co., Berlin, 1894.

T. de Havilland Hall, M.D., F.R.C.P. Lond.,—Diseases of the Nose and Throat. H. K. Lewis, Lond., 1894.

F. W. N. Haultain, M.D., etc., and J. Haig Ferguson, M.D., etc.,—Handbook of Obstetric Nursing. Second Edition. Young J. Pentland, Edin. and Lond., 1894.

Patrick Hehir, M.D., etc.,—A Catechism of Hygiene and Sanitary Science. Part 1—Water. Thacker, Spink, & Co., Calcutta, 1894.

Jonathan Hutchinson, F.R.S., LL.D.,—A Descriptive Catalogue of the Clinical Museum and Journal of Proceedings. J. & A. Churchill, London, 1894.

Hydatid Disease. Vol. II. Collection of Papers by the late John Davies Thomas, M.D. Lond. Edited and Arranged by Alfred A. Lendon, M.D. Lond. Baillière, Tindall, & Cox, London; L. Bruck, Sydney, Australia, 1894.

Dr S. Icard,—L'Alimentation des Nouveau-nés. Félix Alcan, Paris, 1894.

Edward Jackson, A.M., M.D., and E. B. Gleason, S.B., M.D.,—Essentials of Diseases of the Eyes, Nose, and Throat. W. B. Saunders, Philadelphia, 1894.

Skene Keith, F.R.C.S. Ed., and Geo. E. Keith, M.B., C.M.,—Text-Book of Abdominal Surgery. Young J. Pentland, Edin. and Lond., 1894.

J.-V. Laborde,—Les Tractions Rythmées de la Langue. Félix Alcan, Paris, 1894.

Dr J. Laumonier,—Hygiène de l'Alimentation. Félix Alcan, Paris, 1894.

W. Martindale, F.C.S.,—Analyses of Twelve Thousand Prescriptions. H. K. Lewis, London, 1894.

Prof. Dr H. Oppenheim,—Lehrbuch der Nervenkrankheiten. S. Karger, Ber., 1894.

Prof. Ph. Panas,—Traité des Maladies des Yeux. 2 Vols. G. Masson, Paris, 1894.

Prof. William Pepper, M.D., LL.D.,—A Text-Book of the Theory and Practice of Medicine, by American Teachers. Vol. II. W. B. Saunders, Philadelphia, and F. J. Rebman, Lond., 1894.

Charles D. F. Phillips, M.D., LL.D., F.R.S. Edin.,—Materia Medica, Pharmacology, and Therapeutics: Inorganic Substances. Second Edition. J. & A. Churchill, London, 1894.

Prescription Book. J. Wright & Co., Bristol.

Quain's Elements of Anatomy. Vol. III., Part 3. Organs of the Senses. By Prof. Schäfer. Longmans, Green, & Co., Lond., 1894.

Reports of the Medical and Surgical Registrars and Pathologist of the Middlesex Hospital for 1892. H. K. Lewis, Lond., 1894.

Arthur Roberts, M.D., etc.,—The Harrogate Mineral Waters. New Analyses. R. Ackrill, Harrogate, 1894.

Robson Roose, M.D., LL D.,—Gout and its relations to Diseases of Liver and Kidneys. Seventh Edition. H. K. Lewis, London, 1894.

Prof. Robert Saundby, M.D. Edin., etc.,—The Ingleby Lectures, 1894: The Common Forms of Dyspepsia in Women. Cornish Brothers, Birmingham, 1894.

Prof. Lucius E. Sayre, Ph.G.,—Essentials of Practice of Pharmacy. Second Edition. W. B. Saunders, Philadelphia, 1894.

Dr Ossian Schauman,—Zur Kenntniss der sogenannten Bothriocephalus-Anämie. Helsingfors, 1894.

Prof. John C. Shaw, M.D.,—Essentials of Nervous Diseases and Insanity. Second Ed. W. B. Saunders, Philadelphia, 1894.

Prof. Francis J. Shepherd, M.D., C.M.,—A Retrospect of Surgery, Jan. 1890–Jan. 1894. Montreal, 1894.

Maurice de la Sizeranne,—The Blind as seen through Blind Eyes. Translated from the Second French Edition by F. Park Lewis, M.D. G. P. Putnam's Sons, New York and London, 1893.

Noble Smith, F.R.C.S. Ed., L.R.C.P. Lond.,—Spinal Caries. Smith, Elder, & Co., London, 1894.

Stickland & Co.'s Improved Sick-Room Chart. London.

Prof. Eugene S. Talbot, M.D., D.D.S.,—The Etiology of Osseous Deformities of the Head, Face, Jaws, and Teeth. Third Ed. The W. T. Keener Co., Chicago, 1894.

The New Sydenham Society's Lexicon of Medicine and the Allied Sciences. Part 21. The New Sydenham Society, Lond., 1894.

Thirty-third Annual Report of the Cincinnati Hospital for year 1893. Cincinnati, 1894.

Wm. B. Thorne, M.D., F.R.C.P.,—The Treatment of Chronic Diseases of the Heart by Baths and Exercises. J. & A. Churchill, London, 1894.

Transactions of the Obstetrical Society of London. Vol. 35, Part 4. London, 1894.

Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Eleventh Annual Issue. Charles Griffin, & Co., Ltd., London, 1894.

PERIODICALS RECEIVED.

Albany Medical Annals,—March-June.

Alienist and Neurologist,—Jan.-April.

American Journal of Obstetrics,—Jan.-June.

American Journal of the Medical Sciences,—Jan.-June.

American Lancet,—Jan.-June.

American Practitioner and News,—Jan. 13-June 2.

Annales d'Oculistique,—Jan.-May.

Annales de Dermatologie, etc.,—Jan.-May.

Annales des Maladies des Organes Génito-urinaires,—Jan.-June.

Annales des Maladies de l'Oreille, etc.,—Jan.-May.

Annales de la Policlinique de Bordeaux,—Jan., May.

Annales et Bulletin de la Société de Médecine d'Anvers,—Jan.-March.

Annali di Ostetricia e Ginecologia,—Jan.-May.
Archives de Tocologie,—Jan.-June.
Archives Générales de Médecine,—Jan.-June.
Archives of Gynæcology,—Jan.-March.
Archives of Pediatrics,—Jan.-June.
Archives of Surgery,—Jan.-April.
Asclepiad,—Jan.
Australasian Medical Gazette,—Jan.-April.
Berliner Klin. Wochenschrift,—Jan. 1-June 18.
Birmingham Medical Review,—Jan.-June.
Births, Deaths, and Marriages, Monthly Return of,—Jan.-May.
Do., Quarterly Return of,—March.
Do., Supplement, 1893.
Do., Weekly Return,—Jan.-June.
Blätter für Klinische Hydrotherapie,—Jan.-June.
Boston Medical and Surgical Journal,—Jan. 4-June 7.
Bristol Medico-Chirurgical Journal,—March.
British Journal of Dermatology,—Jan.-June.
Brooklyn Medical Journal,—Jan.-June.
Bulletin Bibliographique de la Librairie Française,—March.
Bulletins et Mémoires de la Société Obstétricale et Gynécologique de Paris,—Feb.
Bulletin of the Johns Hopkins Hospital,—Jan.-May.
Centralblatt für Bacteriologie und Parasitenkunde,—Band xv., Nos. 1-24.
Centralblatt für Chirurgie,—Jan. 6-June 23.
Centralblatt für Gynäkologie,—Jan. 6-June 23.
Centralblatt für Innere Medicin,—Jan. 6-June 23.
Centralblatt für Nervenheilkunde und Psychiatrie,—Jan.
Charlotte Medical Journal,—Jan.
Chemist and Druggist,—Jan. 6-June 16.
Chirurgie Contemporaine des Organes Genito-Urinaires,—Feb., March.
Dietetic Gazette,—Jan.
Dublin Journal of Medical Science,—Jan.-June.
Ephemeris of Materia Medica, Pharmacy, Therapeutics, etc.,—Jan.
France Médicale,—Jan. 5-June 22.
Gaillard's Medical Journal,—Jan., May.
Gazette Médicale de Paris,—Jan. 13-June 23.
Gazzetta Medica di Torino,—Jan. 11-May 31.
Glasgow Medical Journal,—Jan.-June.
Health Reports by the Medical Officer of Aberdeen,—Jan.-April.
Hygiene,—Jan. 6.
Il Policlinico,—Dec. 15-June 15.
Index Medicus,—Jan.-May.
Indian Medical Gazette,—Jan.
Indian Medical Record,—Jan. 1-May 16.
Indian Journal of Pharmacy,—Jan.-April.
International Medical Magazine,—Jan.-May.
Jahrbuch für Kinderheilkunde,—Band 36, Heft 2-4.
Journal de Médecine de Paris,—Jan. 7-June 24.
Journal of Anatomy and Physiology,—Jan., April.
Journal of Cutaneous and Genito-Urinary Diseases,—Jan.-June.
Journal of Mental Science,—Jan.-April.
Journal of Nervous and Mental Disease,—Jan.-June.
Journal of State Medicine,—Oct.
Journal of the American Medical Association,—Jan. 6-June 9.
Journal of the British Dental Association,—Jan.-June.
Klinische Monatsblätter für Augenheilkunde,—Jan.-June.
Liverpool Medico-Chirurgical Journal,—Jan.
Mathews' Medical Quarterly,—Jan., April.
Medical Chronicle,—Jan.-June.
Medical Magazine,—Jan.-June.
Medical Pioneer,—Jan.-June.
Medical Press and Circular,—Jan. 3-June 20.
Modern Medicine and Bacteriological Review,—Feb.
Montreal Medical Journal,—Jan.-May.
Morningside Mirror,—March 15, April 16.
New Yorker Medicinische Monatsschrift,—Band v., No. 12.
New York Journal of Gynæcology and Obstetrics,—Jan.-June.
New York Medical Journal,—Jan. 6-June 16.
New York Medical Record,—Jan. 6-June 16.
New York Post-Graduate,—Feb.-June.
Nordiskt Medicinskt Arkiv,—Band iv., No. 2.
Occidental Medical Times,—Jan.-June.
Ontario Medical Journal,—Jan.-May.
Pacific Medical Journal,—Jan.-June.
Philadelphia Medical and Surgical Reporter, Jan. 6-June 16.
Philadelphia Medical News,—Jan. 6-June 16.
Philadelphia Universal Medical Journal,—Jan.-May.
Practitioner,—Jan.-June.
Proceedings of the Society for the Study of Inebriety,—Feb.-May.
Progresso Medico,—Jan. 25-April 30.
Quarterly Medical Journal for Yorkshire and adjoining Counties,—Jan., April.
Quarterly Therapeutic Review,—Jan.
Revista Médico-Quirúirgica Americana,—Jan., March.
Revue de Chirurgie,—Jan.-May.
Revue de Thérapeutique Médico-Chirurgicale,—Jan. 1-June 15.
Revue du Commerce et de l'Industrie,—April.
Sei-i-Kwai Medical Journal,—Jan.-April.
Science Progress,—March.
Spitalul,—Jan. 1-15.
Teratologia: Quarterly Contributions to Antenatal Pathology,—April.
The English Illustrated Magazine,—Jan.
The Hospital,—Jan. 6-June 23.
Therapeutic Gazette,—Jan.-May.
Virchow's Archiv,—Jan.-April.
Weekblad van het Nederlandsch Tijdschrift voor Geneeskunde,—Jan. 6-Feb. 24.

Part First.

ORIGINAL COMMUNICATIONS.

I.—THREE CASES ILLUSTRATIVE OF HERMAN FREUND'S LAW OF PEDICLE TORSION IN OVARIAN TUMOURS.

By A. R. Simpson, M.D., Professor of Midwifery and the Diseases of Women and Children in the University of Edinburgh.

(*Read before the Obstetrical Society of Edinburgh, 9th May* 1894.)

When the preparation was still fresh, I showed the Society a specimen of an ovarian dermoid with torsion of the pedicle, remarking that it illustrated Dr Herman W. Freund's explanation of the pedicle torsion of ovarian tumours.[1] Two other cases of ovariotomy this spring have occurred where the pedicles were twisted, and as the histories of the cases which furnished the preparations present several points of interest, I give them from the ward journal as drawn up by Dr Fothergill:—

Case I.—Lily M'L., æt. 20. Patient was admitted on December 7th, complaining of pain in the abdomen, especially on the left side, and of amenorrhœa for two months. On December 1st she fancied she strained herself in reaching up to clean a window. On December 3rd she felt a severe pain in the right iliac region. Next day the pain was absent; but patient felt out of sorts, and took an aperient. On the following day the pain returned, but patient worked hard and was exposed to the weather. Two days later she was admitted, having been at work till the night before.

Previous health excellent, with the exception of measles and scarlatina.

Family health interesting, as her mother states that she herself had a tumour (dermoid cyst) removed from the face some years ago. Two of her sisters (aunts of patient) have cancer—one of mamma, the other of uterus—and an aunt (great aunt of patient) died of cancer of the uterus.

Menstruation regular; twenty-one days' type; duration four days. There was some irregularity at its establishment; and patient had an excessive discharge once, a year ago. She has missed the last two periods; she has sometimes had post-menstrual leucorrhœa.

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[1] "Der gewöhnliche und ungewöhnliche Wanderungsmechanismus wachsender Eierstocksgeschwülste," *Volkman's Sammlung*, 361-62; and also "Die Stieldrehung der Eierstocksgeschwülste," *Centralblatt für Gynækologie*, 4th June 1892.

No pregnancy or abortion. During the present attack the patient has had pain on micturition. She has always been constipated.

On physical examination, the mammæ were small and distinctly nulliparous. The abdomen was slightly rotund, with a tense elastic wall. Some tenderness was noted in the right iliac fossa and hypogastrium. The percussion-note was tympanic in all regions. *P.V.*, the cavity was roomy, with moist rugose walls. There was some tenderness. The cervix was normal. A firm rounded swelling could be felt to the right of the uterus. Under chloroform this was found to be about the size of a child's head. The uterus lay somewhat backward and to the left, and was normal in size and consistency.

On December 23rd Prof. Simpson opened the abdomen, and found that extensive adhesions had formed; but on separating these he found a cyst, with its pedicle twisted to the left, growing from the right ovary. Torsion had caused effusion of blood into the mass, and about ℥iij. of dark fluid was aspirated. The tumour removed was thick-walled, multilocular, and obviously dermoid in character,—one cavity containing hair, others whitish sebaceous matter, and others being lined with a structure closely resembling a mucous membrane.

Recovery was unmarked by any abnormal symptom, and the patient was dismissed well four weeks later.

CASE II.—Mrs M., æt. 29. The patient was confined of her sixth child on December 10th, 1893, and noticed that her abdomen remained much distended during the puerperium. At the beginning of March she was admitted to the Royal Infirmary, complaining of the mechanical inconvenience caused by the large size of her abdomen. There had been some pain previously, which disappeared two weeks before admission.

Her previous health had been excellent. The family history was unimportant. Menstruation began at the age of 14 and was irregular, the type varying from twenty-one to twenty-eight days; duration, three to four days. There was no menorrhagia, dysmenorrhœa, or menorrhagia, nor was there any intermenstrual discharge. Her pregnancies were six in number—the first ten years, and the last three months, before admission. Labours and puerperia were all normal, except the last puerperium, which was complicated as above mentioned. During the pregnancy she thought she was "larger" than usual, but had no abnormal symptoms. Lactation in the last case was terminated in hospital by belladonna plasters. There was no disturbance of the functions of bladder or rectum, nor were any of the other systems affected.

On physical examination the mammæ were of moderate size, but full of milk, with dark areola and prominent nipple.

The abdomen was very prominent, and resembled in size a full-time pregnancy. The umbilicus protruded, and the striations were numerous. A very tense tumour was felt on palpation rising from the pelvis, and yielding marked fluctuation. The percussion note was dull, except for 1½ inch below the ensiform and over a small portion of each flank. *P. V.*, the cavity was smooth and moist, conical in shape, like a senile vagina. The cervix was small and atrophied, the body of the uterus being but indistinctly palpable. The rounded lower surface was felt to move on pressure with the external hand. The appendages were not palpable.

On March 14th Prof. Simpson opened the abdomen, and finding numerous adhesions between the tumour and the omentum, separated these with sponges, and then aspirated. The fluid was brown and viscous. Some degenerated septa escaped along with it. The tumour was then found to arise from the left ovary, with a well-marked twist to the right. The other ovary was healthy. The uterus was very small and thin, recalling the atrophied condition of the cervix noted *P. V.* The pedicle was secured with a single ligature, the tumour removed, and the incision closed.

The patient recovered without a bad symptom, and was discharged well four weeks later.

CASE III.—Mrs N., æt. 24. Patient admitted February 7th, 1894, with pain in back and abdomen, mostly on left side; also pain in the legs, of four months' duration. She had a miscarriage five months ago. She had then severe pain in the legs and back. Her general health has since improved. Previous health excellent; family history unimportant.

Menstruation began at 15, was of twenty-eight days' type, and five or six days' duration. There was always some dysmenorrhœa; but previous to marriage, eight months ago, no amenorrhœa, menorrhagia, or leucorrhœa. After marriage, she missed two periods and aborted at the third month; she then menstruated four times, and had some intermenstrual leucorrhœa. She has not menstruated at the last two periods. Patient sometimes has pain in the region of bladder after micturition. She suffers from constipation.

On physical examination the mammæ are large and unstriated, with secondary areola and prominent nipple, a large amount of gland tissue, but no secretion.

The abdomen is prominent, specially on the right side. There are no striæ, a faint linea nigra, and flattened umbilicus. A large rounded tumour can be felt reaching from the pelvis to an inch above the navel and 2 inches to the left of the middle line, extending on the right back along the crest, almost to the quadratus lumborum. Fluctuation is very perfect. The percussion-note is dull over the area mentioned. *P. V.*, there is a roomy vagina; the cervix is large, soft, and high up. Through the right and anterior fornices can be felt the body of the uterus, separate from the tumour, which can be pressed by the external hand into the pelvic brim. The body of the uterus is the size of one three months pregnant, and has the same consistency. The vaginal walls show the purple hue of pregnancy.

On February 17th Prof. Simpson opened the abdomen, and found a parovarian cyst growing from the left side, twisted to the right, and lying to the right of the abdomen. The uterus was three months pregnant and pushed to the right. The tumour was removed.

Recovery was perfect, and occurred with no interference to pregnancy. Patient was dismissed a month later, and Dr Clarkson wrote on May 1st saying that she is in good health, and pregnancy advancing normally.

ORIGIN OF DERMOIDS.

The first case presents a point of interest in regard to the nosogenesis of the tumour, which was a dermoid. Two distinct explanations have been offered of the origin of dermoid tumours of the ovary:—

1. Blumenbach, Waldeyer, Lawson Tait, and others, have maintained the opinion that they arise from perverted development of an ovum or primordial germ cell. This theory is very earnestly pressed by W. A. Johnstone of Cincinnati in a paper[1] read last year before the American Gynecological Society, in which he relates the history of a case where he found in the wall of an ovarian dermoid "the inside of a heart almost perfectly formed."

2. The idea of Heschl, on the other hand, that we have here to do, as in dermoid tumours elsewhere, with the inclusion of cutaneous elements that have become ensnared among the deeper tissues during the development of the embryo, is strongly advocated by Olshausen.[2] The circumstances that the mother of our patient had had a dermoid tumour of the cheek, and that some of her other relatives had been the subjects of cancers—the origin of which has been attributed by Waldeyer to the inclusion of epithelial elements in connective tissues—seem to lend probability to this explanation. At the same time, it is to be observed that the tumour is not a pure dermoid; for while one cyst contained skin with hair and sebaceous contents, other cysts contained a more watery fluid, and were lined with the epithelial cells that more resemble those of a mucous membrane. And Bland Sutton[3] has shown that there are all stages of transition from the true dermoids to the ordinary glandular cystomata of the ovary, the origin of which he traces to the follicular elements of the ovary proper.

SUPERINVOLUTION OF THE UTERUS.

The second case was peculiar in its association with atrophy of the uterus. This had set in after the confinement, three months before the operation. In a communication I made to this Society on Superinvolution of the Uterus,[4] I pointed out that this puerperal atrophy might be associated with the development of tumours, and made reference to a case where the superinvolution set in after an abortion in a patient who had a sarcomatous tumour of the thigh. In the present instance, I cannot trace any condition that would explain the atrophy, except the nutritive disturbance in the whole sexual apparatus, due to the apparently rapid growth of the ovarian tumour subsequently to the labour, or interference with the uterine circulation from the torsion of the ovarian pedicle. The superinvolution had been recognised in the bi-manual examination of the patient, conjoined with the use of the sound, and was confirmed by direct observation during the operation.

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[1] *Transactions of the American Gynecological Society*, vol. xviii. p. 301, 1893.

[2] Billroth and Luecke's *Handbuch der Frauenkrankheiten*, ii. p. 665.

[3] *Dermoids, or Tumours containing Skin, Hair, Teeth, etc.*, 1889, p. 109.

[4] *Edinburgh Obstetrical Transactions*, vol. viii. p. 88, 1882-83.

OVARIOTOMY DURING PREGNANCY.

The peculiarity in the third case was its complication with pregnancy. The possibility of the occurrence of conception in a woman with an ovarian tumour is well known, but the diagnosis is not always easy. In some cases the discovery has only been made after the abdomen has been opened, with the view of removing the ovarian growth. Various opinions have been expressed as to the influence of pregnancy on such tumours,—some believing that the tumour grows more rapidly, others that it is checked in its development. Dsirne, in his paper on "Ovariotomy in Pregnancy,"[1] thinks the evidence is in favour of their more rapid growth in pregnant women. The pregnancy, he goes on to show, may progress, and labour end unhindered,—Hegar and Kaltenbach giving the labours that end normally in presence of ovarian tumours as 60 per cent.; and Dsirne himself finding 29 out of 135 cases where the woman had at least been delivered once before the tumour gave rise to trouble. Sometimes there had been several labours,—as many as eight or eleven. But when the question arises as to the treatment of a gravid woman suffering from an ovarian tumour, we have to keep in view that Heiberg has given the results of 271 cases of this complication, which showed that one-fourth of the mothers and two-thirds of the infants perished. Hence obstetricians more and more are encouraged to have recourse to ovariotomy during pregnancy. When we look at the results of ovariotomy in pregnant women as given by Olshausen,[2] we find that of 82 patients operated on 74 recovered, giving a mortality of 9·8 per cent., which closely approaches to the mortality of 9·5 per cent. which he gives as the result of ovariotomy in general. Dsirne's statistics give a mortality of only 5·9 per cent.; and among his 135 cases there were six where both ovaries were removed. All the six women recovered: two aborted, one had premature labour at the eighth month, the other three had normal deliveries. He shows that the pregnancy is interrupted in 22 per cent., that the operation becomes more dangerous as pregnancy advances, and that the third month is the most favourable period. Polaillon[3] gives a case of double ovariotomy at three and a half months, where the tumours were adherent to the omentum and the bowels, yet the patient recovered, and had a normal delivery at the full term. Our patient came under observation, therefore, and was operated on at the most satisfactory period of pregnancy.

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[1] *Archiv für Gynækologie*, xlii. 415, 1892.

[2] *Loc. cit.*, 399.

[3] *Annales de Gynécologie*, xxxvii. 2, 1892.

PEDICLE TORSION.

The point of common interest in the three cases is that in each there was marked torsion of the pedicle. Now, as regards the first of the cases, where we had to do with a dermoid tumour, we note that whilst Olshausen gives the proportion of dermoids in all cases of ovariotomy as 4 or 5 per cent., he found that in his twenty-one cases of pedicle-torsion four were dermoids. One of the earliest papers on the twisting of the pedicles of ovarian tumours was submitted to this Society many years ago by Sir William Turner,[1] and out of the seven cases that formed the basis of his communication, in at least four the tumours were dermoid. As regards the second case, it may be taken to support the idea expressed by Sir Spencer Wells and others, that torsion of the pedicle is apt to follow the diminution of the uterus after labour; whilst the third case may be supposed to corroborate the opinion of Barnes, Schröder, etc., that the torsion may be produced by the growth of the gravid uterus.

These and many other causes have been adduced in explanation of the occurrence of the twist. The influence of the alternate filling and emptying of the rectum, first clearly enunciated by Lawson Tait,[2] has been maintained by Alban Doran[3] and others. Klob refers the rotation to the alternate filling and emptying of the bladder; whilst unequal growth of the tumour, changes of position of the patient, the action of the abdominal muscles, and gynecological examinations, have all been called in to explain the occurrence in cases where axial rotation has been found during ovariotomy. The most important contribution, however, to the whole subject has been made by Dr Herman Freund, in the papers to which I have referred. He has shown that in the progress of growth ovarian tumours undergo changes of position at two different stages. In the first, whilst they are pelvic, their tendency is to grow downwards behind the uterus, and to keep their pedicle on their anterior aspect. In the second stage, when they rise out of the pelvis, they tend to fall forwards towards the abdominal wall, and their pedicle is then found on their posterior aspect. My old master, Prof. Goodsir, used to teach us that there was a law of spirality guiding the growth of all organisms. This idea has been worked out by Prof. Emil Fischer of Strassburg,[4] who maintains that axial torsion is a function of the living cell; that the growth of organisms takes place under constant spiral axial torsion, and that bi-lateral symmetrical organisms possess on the right side of the body sinistro-spiral growth-torsions, and on the left dextro-spiral growth-torsions; and he indicates that this holds good with regard to ovaries, ovarian ligaments, tubes, and broad ligaments. Now, H. Freund has made observations which confirm Fischer's thesis; and pushing his investigations into the condition of the pedicle of ovarian tumours, comes to the conclusion that in all cases where an ovarian tumour reaches the second stage, and has no obstacle presented to its usual progress, there will be found a torsion of the pedicle to the left in right-sided, and to the right in left-sided tumours. The usual rotation may be prevented or counteracted by adhesions, by the presence of other tumours, or by undue tension of the abdominal walls. The rotation may represent only half a turn or a full turn, and in some cases may be oftener twisted without giving rise to distinct disturbance, though he finds that the cases of exaggerated torsion occur in the nearly 200 cases that formed the subject of his research in about the proportion of 8 per cent., which is given by Olshausen as the percentage of pedicle-torsions generally in ovariotomy. Whatever may lead in individual cases to the exaggerated torsions, Freund seems fairly to have established the law that right ovarian and parovarian tumours have normally a sinistro-spiral twist of the pedicle, and that tumours of the left side have a dextro-spiral twist. The cases I have related are accordant with Freund's law.

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[1] *Edinburgh Medical Journal*, 1860-61, p. 698.

[2] *Diseases of the Ovaries*, 1883, p. 303.

[3] *Tumours of the Ovary, etc.*, 1884, 118.

[4] *Das Drehungsgesetz bei dem Wachsthum der Organismen*, 1884.

II.—THE ELECTRICAL TREATMENT OF UTERINE FIBROIDS AND SUBINVOLUTION.

By F. W. N. Haultain, M.D., F.R.C.P. Ed., Lecturer on Midwifery, etc., Edinburgh School of Medicine.

(*Read before the Obstetrical Society of Edinburgh*, *14th March* 1894.)

Now that the electromania, so acute among some gynæcologists, has abated, and that its more rabid opponents have temporarily ceased from troubling, it is, I trust, possible to bring forward a practical and unprejudiced statement of some of the effects of the constant current in uterine disease, and view them in an unbiassed manner.

For this purpose I have collected a series of thirty cases treated by myself within the last three years, on which I have made accurate and careful observation before, during, and after treatment. These, I should add, have not been selected, but represent the entire number upon which this form of treatment has been adopted by me during this time.

To view the results as practically and succinctly as possible, I propose to consider the subject in the following manner:—*1st*, The pathological conditions for which the treatment was adopted; *2nd*, The method of treatment; *3rd*, The effects of the treatment; *4th*, The probable mode of action.

1. *The Pathological Conditions for which the Treatment was adopted.*—These, as the name of the paper implies, were entirely confined to disease of the uterus itself, and were marked by enlargement of the uterine cavity. Twenty-two were associated with neoplasms in the walls, and eight with a chronic inflammatory state of the mucosa,—in other words, cases of fibromyomata, and subinvolution with endometritis.

In all of the former and most of the latter the characteristic symptom was hæmorrhage, either menorrhagic or metrorrhagic, and of such severity as to give rise to anæmia of a marked character. Associated with the bleeding there was, with the endometritic cases, the other well-known symptoms of leucorrhœa, pain, pelvic weight, etc.,—while some of the fibroids were sufficiently large to cause pressure inconveniences.

The patients suffering from fibromyomata varied in age from 20 to 47 years, and in all, the growths were well marked, ranging in size from a chestnut to that of a uterus at full term. The uterine cavity varied from 3 to 7½ inches in length.

In all the cases of endometritis the uterine cavity was enlarged more than ¾ inch. It will thus be seen that in no case were symptoms alone looked upon as sufficient grounds to adopt treatment, but well-marked uterine enlargement, either associated with mural growths or endometritis, showed signs of distinct uterine disease.

This I consider a point of considerable importance, as I cannot but believe that many so-called failures of the current in checking hæmorrhage have been due to the fact that disease of the ovaries has been the prime factor in its causation, the uterus being in some cases to all appearance healthy, while naturally in other cases it may be secondarily or simultaneously affected.

Two marked illustrations are foundation of this assertion :—

Case I.—A young female of 17, who for two years had suffered from such severe menorrhagia that she was a confirmed invalid from anæmia, and all attempts to check the bleeding by uterine treatment had proved futile. On examination, the uterus appeared to be normal in size and position, but at either side could be felt two enlarged ovaries about the size of small tangerine oranges; these were removed with the best results, and on examination were found to be studded with small peripheral cysts like enlarged Graafian follicles, a pathological condition which, though rare, is a known cause of uterine hæmorrhage.

Case II.—Unmarried female, aged 32, with well-marked fibroid uterus, cavity 3¾ inches, showed no improvement from her menorrhagia, etc., after thirty-five applications of the current. Removal of the ovaries showed them to be of the same nature as Case I.

2. *Method of Treatment.*—Before describing this branch of the subject I should like to state that a profound intimacy with the science of electricity is unnecessary, all that is required being a knowledge of its elements, such as the recognition of the positive

from the negative pole, and the appreciation of the dangers and inconveniences of suddenly interrupting the current.

It is well, however, though by no means absolutely essential, that a more extended knowledge of the science be acquired, as by this means one is less dependent on the professional electrician, should the battery, as is its wont, cease working from some trivial cause.

In simplifying this method of treatment we are much indebted to Schall of London for his admirably complete batteries, by which the comparative novice, with the exercise of a little caution, can as competently perform the treatment as the profound electrical scientist.

The apparatus required for treatment is so well known that it hardly requires mention. Shortly it may be described as—

1. A 40-celled battery to give the current.
2. Electrodes to convey " "
3. A galvanometer to measure " "
4. A rheostat to regulate " "

The rheostat is perhaps unnecessary if Schall's double collector battery be used; but for the comfort of the patient in allowing the gradual increase of the current, and also in eliminating the possibility of a sudden and severe shock from a disconnection between the cells, I consider it almost indispensable.

The electrodes I am in the habit of using are,—for the abdomen, a piece of flannel, twelve inches square, soaked in salt solution, to which is applied a small zinc plate connected to the battery; and for intra-uterine application, a platinum-pointed sound enveloped in a movable gum-elastic sheath as insulator.

The application of the current should differ somewhat in cases of fibroids from that of endometritis. In the former the interpolar action seems sufficient for our purpose, while in the latter a local action on the uterine mucosa is specially beneficial.[1]

In cases of fibroid I generally use 2 to 2½ inches of exposed metal in the intra-uterine electrode; while in endometritic cases, to gain the local action, and at the same time keep the strength of the current within the limits of being comfortably borne, all that is necessary is to slide the insulating sheath over the platinum electrode till only ¾ inch of the metal is exposed. This concentrates and increases the density of the current, and by successively applying the exposed metal to the various parts of the uterine mucosa, the necessary local action is acquired. For this purpose the carbon-pointed electrodes are specially useful.

The strength of the current used by me has never exceeded 150 milliampères, and in most of the cases treated 110 m. has been the maximum. There seems to be little or no benefit in using currents of higher strength, although 250 to 300 m. can be given, if thought necessary.

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[1] See Method of Action of Current.

In cases of urgent hæmorrhage the positive pole should always be intra-uterine, as its local coagulative action is an important factor in its arrest.

But in fibroids not actually bleeding, and in chronic endometritis without severe hæmorrhage, negative intra-uterine electricity appears quite as efficacious as positive, and I thus have occasionally employed both alternately with beneficial results. The negative pole, when intra-uterine, seems to be less painful than the positive under like conditions, and I therefore, in nervous patients not actually bleeding, generally employ the former for the first few applications.

Occasionally, after using the negative pole in the uterus, I have noticed a slight recurrence of hæmorrhage, but this has always been easily stopped by a hot douche.

The length of time I employ for the passage of the current at each application is from five to ten minutes, and the number of applications I have found necessary has been from fifteen to thirty-five before permanent satisfactory results have been obtained. Usually it requires two or three applications of low currents before the patient can comfortably bear the full strength required, but toleration is generally soon established, the applications being eventually borne without any discomfort. The applications should be regularly performed twice to thrice weekly, menstrual period included.

During the course of treatment I never advocate any particular regime, such as rest in bed, etc.; I rather favour attempts at increased exercise.

In no single case have I had the least suspicion of inflammation or any untoward symptom beyond the cases of cerebral congestion and excessive hæmorrhage I later describe.

3. *Effect of Treatment.*—This, for simplicity, must be considered from a threefold point of view,—*1st*, The effect on local symptoms; *2nd*, the effect on uterine enlargement; *3rd*, constitutional effect.

Under the first heading undoubtedly lies the main action of the current, viz., its hæmostatic power; and it is chiefly from a desire to add testimony to its great value in this direction that I have been induced to bring the subject before you.

Of the twenty-two cases of uterine fibromata which I have thus treated, fourteen were cured[1] after a course of treatment varying from fifteen to thirty applications; in four the hæmorrhage, though temporarily stopped, returned within a few months; three of these were cured after a second course; the remaining one is at present temporarily benefited, but sufficient time has not yet elapsed for me to reckon her as a cure.

Three cases proved entirely unsuccessful: in one of these I removed the ovaries with the best results, as already stated; the remaining two suffered from tumours larger than a seven months' pregnancy. They were considerably benefited during the treatment, but no permanent improvement has been obtained, though the applications have been twice repeated.

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[1] By cure is here meant the entire cessation of morbid symptoms for a period over twelve months from the last application of current.

The remaining case could not withstand the pain caused by the lowest currents, and treatment had to be discontinued.

In the seventeen cases cured, the growths varied from the size of a chestnut to that of a six months' pregnancy, and in five of these polypi were expelled after applications varying from one to twenty-seven in number.

In some of the cases treated, the hæmostatic action was evinced extremely rapidly; in others it was developed but slowly. In one case the patient had scarcely ever been dry for more than a week at a time for five years; but from the day the treatment was commenced, not a drop of blood was noticed for six weeks. In other cases hæmorrhage is occasionally evidently brought on by the first two or three applications, a condition particularly to be noted where pedunculation is taking place.

Of the cases of subinvolution with menorrhagia, six cases, it was in all greatly diminished, four being cured.

In three of the cases cured, child-bearing has been re-established, after a period of sterility varying from six to fifteen years.

Another well-marked effect of the treatment in these endometritic cases is the rapid mitigation and sometimes entire removal of the pain and pelvic discomfort with which this affection is so frequently associated. This result is often manifested after two or three applications, long before any appreciable local change can be recognised. The leucorrhœa in all cases was much decreased; in six it was absolutely cured.

Effect of Current on Uterus, and *Effect on Size of Uterus.*—There can be little doubt that the current has a decided effect in reducing the size of the uterus and uterine cavity, and, as is to be expected, this result can be more satisfactorily followed in cases of subinvolution. In all of these cases which I have treated to recovery there has been undoubted diminution, and in some the decrease has been the most remarkable incident in the treatment.

In one patient who had suffered for three years, and whose uterus measured 4½ inches, the treatment (twenty-five applications) reduced the size to the normal 2½ inches. Such a perfect result, however, has been by no means uniform at my hands; the enlarged uterus, though much diminished, seldom regains its normal dimensions; in only two others did this obtain, and in these the morbid condition was of comparatively short duration, it being but twelve months after confinement when treatment was adopted.

All the cases, with one exception, had previously undergone the stock treatment of curetting and cauterization, with but trifling improvement.

The size of the uterine cavity in cases of fibromyomata being dependent, to a great extent, on the character of the tumour in its wall, whether interstitial, submucous, or subserous, must vary as regards the effect of treatment upon it, by the effect of treatment on the tumour itself, and this brings us to the much disputed question: Does the tumour itself become atrophied or destroyed?

As I wish simply to give the unbiassed results of my own practice and experience, I can only state that, of the twelve cases cured without expulsion of the growth, distinct, marked, and measurable diminution of the tumour occurred in five cases, while in the remaining cases the tumour became much harder and appreciably smaller, though not to such an extent as could be definitely measured. That this was so is proved at least in four cases, where previous pressure symptoms became entirely removed, although the tumour remained in its original situation. The diminution in the size of the tumour in two cases, on the other hand, gave rise to very severe temporary symptoms of pressure, the previously enlarged abdominal tumour, from its decrease in size, lost its pelvic support and prolapsed into the pelvis, in the one case causing complete urinary retention, and in the other such severe cramps in the legs and pain that locomotion was impossible. In both I was able to support by means of a vaginal pessary, and thus relieve symptoms.

One of the cases of marked diminution is sufficiently interesting to demand description :—

Patient, aged 32, from Moffat, when examined on February 16th, 1891, had a well-marked uterine tumour, about the size of a five months' pregnancy, which caused such severe menorrhagia (twelve days' duration) that she had been practically bed-ridden for eighteen months; sound passed 4½ inches.

On May 14th, 1891, after twenty-eight applications of the current, she was so well that she went home; sound passed 3½ inches; period lasted five days; tumour slightly diminished.

In January 1893 patient returned to state that the abdominal swelling was entirely gone, and that her periods now only lasted three days. On bi-manual examination the tumour could be felt, about the size of a small orange, attached to the uterus posteriorly; sound passed 2¾ inches.

I last examined her in July, and was surprised to find no trace of tumour existing. The patient was in perfect health.

Constitutional Effects.—Perhaps the most striking and satisfactory result of the electrical current is the almost universal feeling of well-being which the patients rapidly manifest during their course of treatment. After the first two or three applications, the gratuitous announcement of increased vigour, both mental and physical, is most encouraging, and alone would seem almost to warrant the adoption of the treatment. The rapidity with which colour is imparted to the previously sallow cheeks, and the evidence of energy in the former listlessness, is usually at once the talk and wonder of the patient's friends.

That this of course is due to the cure of the anæmia is evident; but from the rapidity with which the result is obtained I cannot but feel that the current in some way stimulates the blood formation. That something more than the mere stoppage of the hæmorrhage is present is, to my mind, clearly proved by the fact that, although many of my patients had intervals of two or three weeks during which there was no hæmorrhage, yet during these intervals they neither felt nor appeared to have gained strength in the least degree comparable to that which they manifested within a week or ten days of treatment. In fact, in one case the rapid increase in the blood proved a distinct element of danger, and as it is a striking illustration, I do not hesitate to detail it.

A lady, aged 47, a confirmed invalid for ten years through uterine hæmorrhage, came under my care in about the last stages of anæmia, her blood discs numbering 1,700,000 per cubic mill. In ten days they had increased 20 per cent., being 2,700,000, while after five weeks they approximated the normal, being 4,800,000. At this time symptoms of cerebral congestion of an anxious nature showed themselves,—so much so that treatment was permanently suspended, and it was not till a much desired and copious uterine hæmorrhage occurred that relief was got.

Since that time to this she has been regularly unwell, the periods varying from five to seven days. Her last letter is most enthusiastic over the effects of the treatment, and she says she does not remember ever having felt so well before.

4. *The Mode of Action of the Current.*—From a practical point of view this would seem to be twofold, viz., local and interpolar.

A distinct local action on the tissues in contact with the positive electrode results is an established fact, proved absolutely by experiment. Its nature would appear to be analogous to searing,—a fine, compact coagulum being formed.

That this change on the mucosa has a decided effect in checking hæmorrhage is certain, and that it is of special value in destroying unhealthy states of the mucous membrane there can be little doubt. But, from practical experience, it seems to me that its action as a hæmostatic is of but secondary value when compared with the interpolar action of the current.

To this conclusion I have arrived from the following reasons:—

First, In but few cases of fibroids have I attempted to secure this local action on the mucosa, the electrode having been introduced in the same manner each time, and thus it is certain local contact of the electrode with the entire mucosa was improbable.

Second, In the case I have already described of marked diminution and disappearance of the tumour, the electrode was never introduced more than one inch into the cervix, for although the cavity measured 4½ inches, the pain and difficulty in passing the sound was so great that attempts to insert the electrode to the fundus were never tried.

What the exact nature of this interpolar action is I do not pretend to say, but certainly, from experimental and clinical evidence, we are forced to concede that there is at any rate a double action,—1, On the muscle fibres, causing contraction; 2, on the bloodvessels.

That contraction of muscular fibres is an important factor in the action of the current is clinically explained from the experience of the twenty-two cases of fibroids treated, of which in five polypi were expelled after a varying number of applications of the current.

One particularly striking example occurred in the case of a young female who had suffered from severe menorrhagia for several years. Some hours after the first application of the current (60 mps.) I was sent for in a hurry, as she was suffering from great pain and alarming hæmorrhage. To control the latter I was obliged to plug the vagina firmly, and was much surprised on the following day to find the os uteri dilated, and projecting through it a polypus of about the size of a chestnut.

The current in this case had evidently at once set up uterine contractions, and that it does so in all cases seems to me probable,—an action which offers at least one very reasonable method of explanation how such satisfactory results are obtained.

If one considers that out of twenty cases treated, five became extruded inwards beneath the mucosa, it is but reasonable to expect that a certain proportion would also become extruded outwards beneath the peritoneum, and by this means, therefore, relief from hæmorrhage would be obtained. Further, if muscular contraction of the uterine wall be caused, it is also reasonable to expect that congestion of the organ will be diminished, and thus the increased vascularity of the mucosa, which is always associated with these fibroid growths (and is, indeed, the seat of the hæmorrhage), will be to a great extent relieved. At the same time the nutrition and growth of the tumour itself will be much interfered with, from the consequent interference with its blood supply. But further, if it be proved that a marked contraction of the muscular fibres of the uterus is set up, it is but natural that a like condition will be met with in the individual muscular fibres, of which the hæmorrhagic type of these tumours are largely composed; this, therefore, would set up secondary changes in the growth itself by arresting its nutrition, and by this means the tumour would not only cease to grow, but become harder and smaller, and even in some cases, as in that which I have already described, altogether atrophy.

A further action of the constant current, as proved by experiment, is that of arresting the capillary circulation; this has been carefully noted during the passage of a weak current (1 mpère.) through the frog's web, which caused slowing and eventually complete stasis to result.

That this may be a further means by which such satisfactory results have been obtained is probable, but further experiment in this direction is necessarily required for confirmation.

Relying, therefore, on the local and interpolar action of the current, it has been my practice in cases where the mucosa was diseased (as in endometritis) to try as far as possible to insure contact between the electrode and as much of the diseased surface as possible; while in cases of fibromyomata, relying alone on the interpolar action, I have inserted the electrode in a purely haphazard fashion, contact with a fractional part of the uterine wall being alone necessary.

To draw conclusions from the results before us—

1. The constant current is of the greatest value as a uterine hæmostatic when due to small fibroids and subinvolutions.
2. It is curative, in most cases, of endometritis.
3. That it reduces measurably the size of a certain proportion of fibroid tumours, while upon the majority it has a salutory though less decided action.
4. That its action on fibroids larger than a seven months' pregnancy is not curative, but temporarily palliative.
5. That it reduces the size of subinvoluted uteri.
6. That beneficial constitutional effects are rapidly promoted.
7. That its method of hæmostatic action is both local and interpolar, the latter being probably the most potent.

Before concluding, I beg first to remark that I purposely refrained from quoting or in any way making use of the large amount of literature already written on this subject, it having been my sole object to present only the result of my own experience in a purely unprejudiced manner. From this experience I cannot but hold that we have in the constant current a most valuable therapeutic agent in some forms of uterine disease which cannot be disregarded, and to which a fair trial must be given before more radical measures are adopted.

That it is a universal panacea in pelvic trouble, as some would have us believe, is, of course, not my contention, as I am but well aware of its occasional failure in cases apparently eminently fitted for its trial. That it has a wider beneficial influence than I have described I have no doubt, though insufficient practical results prevent me dwelling upon them.

Be these what they may, my successes in the cases I have described to you certainly justify me in the continuation of this mode of treatment in like conditions, and are sufficient to make me, as many others, deeply indebted to Dr Apostoli, to whom we owe its development.

III.—ON DR HERON WATSON'S METHOD OF EXCISING THE WRIST JOINT.

By A. G. MILLER, M.D., F.R.C.S.E., Lecturer on Clinical Surgery, and Surgeon to the Edinburgh Royal Infirmary.

(*Read before the Edinburgh Medico-Chirurgical Society, 6th June* 1894.)

It is always an advantage, I think, to excise a joint by one incision, provided it gives good access to the parts to be removed, and efficient drainage afterwards. Hitherto the wrist has been rather an exception to the rule of single incisions, Lister's method by two incisions being the favourite operation. In 1870 the late Dr J. D. Gillespie published an account of a case in which he had excised the wrist by a single dorsal incision. This method is frequently called Langenbeck's, but I have often heard Dr Gillespie say that his case was the first operated on.

Some years ago Dr Heron Watson explained to me how the wrist joint could be completely and easily excised by a single incision similar to Lister's ulnar one. The procedure is as follows:—The knife is entered about 1½ inch above the styloid process of the ulna towards the palmar aspect, and carried down to the metatarsal bone of the little finger, and a short distance along it. An incision of about 3 inches in length is thus made down to the bone. The lower end of the ulna is then cleared, and fully an inch of it removed. The carpus is then exposed and removed piece by piece, the trapezium only being left. The heads of the metatarsal bones can then be dealt with by gouge or saw, being turned out of the wound if necessary. Next, the end of the radius is turned out, which can be quite easily done, and sawn off. Last of all the trapezium is examined, and removed if necessary. Each step in the operation is very easy and very satisfactory. After removal of the necessary amount of diseased bone, very few vessels require to be ligatured. Sometimes one at the radial side of the wound is rather difficult to secure; but as the wound can be turned almost inside out by shoving the thumb in like the finger of a glove, no great difficulty should really be experienced.

The after-dressing that I would advise from my present knowledge and experience is packing with iodoform gauze, which should be diminished in amount at each dressing. The hand and forearm should, of course, be kept at rest on a splint. Passive movement should be commenced not later than a week after the operation. The joints that are most likely to be stiff are the metacarpo-phalangeal, but these are generally very rigid before the operation is performed. They should be freely flexed and extended as a preliminary step to the operation, as advised by Sir Joseph Lister. During the last six years I have excised the wrist by Dr Watson's method ten times, with the following results:—

In one case subsequent amputation was necessary; in one case amputation was advised, but not submitted to; in three more cases disease returned, necessitating scraping; while in the remaining half of the cases the disease did not return, and a useful hand was obtained. In the three cases that were scraped—one of them twice—a fairly useful hand is the result.

A glance at the Table will show an interesting fact, viz., that in eight out of the ten cases the right hand was the one diseased. Does not this point to trauma as the exciting cause?

No.	Name.	Sex.	Age.	Hand.	Date of Operation.	Healed or Discharged.	Result.
1	M. C.	F.	19	R.	5th Mar. 1889	5th Dec. 1889	Return of disease; amputation advised.
2	J. W.	F.	19	R.	3rd Jan. 1890	5th Feb. 1890	Useful hand; able to work in mill; ganglion on back of wrist, probably tubercular.[1]
3	J. M.	M.	30	R.	23rd June 1890	20th Sept. 1890	Fairly useful hand; seen last some months after leaving hospital.
4	Mrs F.	F.	69	L.	14th July 1890	27th Aug. 1890	Fairly useful hand; atrophy of radius and ulna.[1]
5	J. M.	M.	11	L.	20th Jan. 1891	17th Mar. 1891	Return of disease; scraped twice; hand fairly useful; seen June 1894.
6	Mrs F.	F.	30	R.	8th May 1891	29th June 1891	Fairly useful hand; atrophy of radius and ulna; seen June 1894.
7	J. M.	M.	12	R.	2nd June 1891	4th July 1891	Useful hand; seen last some months after leaving hospital.
8	J. B.	M.	48	R.	18th Feb. 1893	11th April 1893	Fairly useful hand; operation for septic disease.[1]
9	H. M.	F.	14	R.	24th Feb. 1893	...	Return of disease; amputation.
10	R. M.	M.	21	R.	30th Dec. 1893	10th Feb. 1894	Return of disease; scraped; hand fairly useful; seen June 1894.

The advantages of this method are:—

1. Only one incision is necessary.
2. Drainage is very efficient, the wound being on the side of the hand which is the lower in the position in which the hand is usually carried.
3. The resulting cicatrix is hardly visible, and therefore the appearance of the hand is fairly natural after recovery.
4. The operation is very easy of performance.

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[1] Shown at Medico-Chirurgical Society, 6th June 1894.

IV.—NOTE ON A CASE ILLUSTRATING THE VALUE OF THE ASEPTIC BLOOD-CLOT AS A SURGICAL DRESSING IN A COMPLICATED INJURY.

By R. W. Irvine, M.B., C.M., Pitlochry.

On the 11th of January 1893 I was summoned to see F. S., who within half an hour previously had had his leg hurt.

He and another boy on one toboggan had been racing four boys of about twenty-eight stones combined weight in a similar toboggan, down two converging roads, to see which would arrive first at the point of convergence. The roads were sheeted with ice, and the toboggans were merely planks on runners of wood. They sat with their legs protruding beyond the sides of the vehicles. The race was so close that, as my patient and his comrade came in first, the others raced past, and the left runner of their toboggan rasped across the right leg of the patient, who wore knickerbockers and worsted stockings. It crossed the centre of the shin. I found a compound comminuted fracture of both bones of the leg. The covering tissues were completely scraped off over an area corresponding to the breadth of the runner, about one and a half inch, and the loss of tissue involved a considerable portion of periosteum gone. There had been considerable hæmorrhage, which had ceased when I got to him. There were scrapings of stocking in the wound. I looked for the ends of the anterior tibial artery, which I felt could not but be ruptured, both from the signs of hæmorrhage and the amount of the injury, but could not see it, and did not take too much pains to grope for it, on the sound surgical principle of "leave well alone where no need to meddle," as the posterior tibial was all right, the foot warm, and its nutrition secure. Having cleaned the wound, removed some useless bits of the shaft of the tibia, fitted one or two more important fragments into the line of the shaft as well as I could, and washed the wound with a syringe with corrosive solution, placed on it a pad of soaked corrosive wool over protective, and covered that with dry corrosive wool, I put up the fracture in splints made of fluted wrapping brown paper, with two layers of it, and a window cut opposite the wound. The boy's age was about 11, and that splint gave ample rigidity. A few hours afterwards I was called again. There had been some movement by the patient, and hæmorrhage to such an extent, as indicated by the stain through the dressings, as to make me certain that the reaction had let loose the anterior tibial again, and active arterial bleeding had gone on for some time, soaking the dressing. Unwilling to disturb the setting of the fracture, which kept its position perfectly, and not seeing any prospect of good to be derived from taking it all down again, and observing that the hæmorrhagic stain was not *extending* through the dressings, showing that Nature's clot was doing its duty, and blocking additional blood loss, I resolved to leave alone for another day, and meanwhile soaked the dressing over the stain with an antiseptic solution to keep things sweet, and got an angled splint made, on which to lay the limb at once, the shape designed to give a comfortable bed for the limb and give free access to the wound. The stain and underlying clot were quite sweet and free from putrefactive odour next day, and I resolved to continue for a day or two with the fluted paper splints and antiseptics, but to lay the whole on the solid wooden rectangular bed, well padded, and with a solid base, and suited to allow the limb to be bandaged permanently, with an access, removable at will, to the wound and clot. The heavy wooden splint was attached, above and below the hurt, to the limb by bandages not meant to be in a hurry altered. That arrangement left the central portion, opposite the wound, accessible without disturbing rigidity.

Things kept—with twice a day dry dressing with dusting powder of 1 of iodoform to 7 of finely pulverized boric acid, and corrosive wool over protective—quite aseptic, at least with no smell, for eight days, while in the meantime I had at each dressing, after the third day, exposed the wound and dusted the clot, continually shrinking and hardening, with the antiseptic powder. On the ninth day of dressing on this principle I found the last shred of the clot so nearly separated that I picked it off, and left a tiny granulating surface, corresponding to the deepest and longest adherent portion of the aseptic blood-clot,—Nature's healing balsam, and the best. No smell—therefore I do not presume, but assume, no putrefaction—ever ensued during its whole course.

The cicatricial tissue was a thing to be carefully guarded by padding, and very tenderly thought of; but with an accident or two it has done its duty well, and the lad can dance the Highland fling and play football, a consummation which my friends will readily understand I regard with a very special satisfaction. The moral of the case is easily stated in a few sentences:—

1. Conservatism in surgery, as in all things.

2. Leave Nature to adopt her own methods of healthy healing action oftener than we, I fear, do.

3. Have patience and faith in what we can neither control nor guide, only help and be guided by, and these are Nature's principles, which were in existence before Æsculapius was heard of, and will be the same yesterday, to-day, and for ever, long after even Listerism has been allotted its due niche in the gallery of the immortals of progressive surgery.

It is interesting to recall the appearance of the clot when exposed for the first time. It was about the size of a halfpenny cookie, and about the same shape. Round its margins it thinned out, clinging to the underlying tissues all round. Its exposed surface was a leathery cuticle of a purple colour, turning slightly grey from the dusting powder as dressing went on. Its consistence was, on touching it, that of a very soft jelly with a skin on it. As it shrunk it hardened and lessened till natural detachment began, and it ended in a bit of ragged fibrinous débris when its work was done.

There is a prevalent misnomer used in the chemistry of manufactures,—the term "waste products." I think it is gradually becoming out of date. As a matter of fact, it should never have been *in* date. Coal tar was a "waste product" at one time, or very nearly so. Now chemical insight has made coal tar the basis of these wondrous aniline products which have revolutionized many an industry, and may do so as time goes on still more. The washings of wool were thrown aside as "waste products," as dirty water, till a process was thought of by which evaporation and cleansing produced from this dirty water one of our most useful bases for ointments in surgical treatment that we possess, viz., lanolin. Examples could be multiplied to any extent. The same "waste product" profanity existed, perhaps not so long ago as twenty years, in surgery. Blood-clot was a thing to be cleared off, chucked out, by the hospital dresser. Pus was a thing to be condemned, and regarded as a reproach to surgery. "Nimia diligentia" was the maxim; Nature was forgot. But we have to follow Nature, not lead her; we have to adopt her healing methods, not improve on them. I do not believe that there is a single *waste* product in Nature, *i.e.*, a substance in which there does not exist a usefulness for a purpose, could we only study it, instead of throwing it aside and adopting our own crude and undigested substitutes. Surgery and sentiment are not, as a rule, supposed to be closely allied, nor imagination with either. I maintain that the three are, perhaps, more closely allied in relation to this science than they are in any other. I am persuaded that the imaginative has preceded the experimental in every step in advance in our or any other science or art,—or both combined, as ours is.

My feeling towards this clot protecting the wound, and I believe by Nature's mandate giving to it the best and the whole it had to give, for its nutrition and healing, till its juice was taken back into the body and its purpose achieved, was one of privilege and duty,—privilege that I was lucky enough to have had an opportunity, *in extremis*, to appeal to Nature; "duty" to be faithful to her, when she so faithfully responded to the appeal.

V.—THE COMMONER VARIETIES OF LUPUS VULGARIS AND THEIR TREATMENT.

By NORMAN WALKER, M.D., F.R.C.P. Ed., Assistant Physician for Dermatology, Edinburgh Royal Infirmary.

(*Read before the Edinburgh Medico-Chirurgical Society, 4th May* 1894.)

IT is not my intention to discuss the histology of lupus, or to review once more the arguments in favour of its tubercular nature. To any one who may still have doubts on that subject, I would recommend the perusal of Prof. Leloir's admirable monograph on

"Tuberculosis of the Skin and Mucous Membranes." Lupus has already been several times before the Society this session, usually to indicate the advantages of one or other form of treatment; but I venture to think that the side from which I approach it is a useful as well as a somewhat novel one, while it will at the same time afford free scope to the members of the Society to enunciate their views on a most important subject.

That there are varieties of lupus has been recognised almost as long as the disease itself. Originally divided into *lupus exedens* and *lupus non exedens*, the latter of these terms, which included *lupus erythematosus*, has almost passed out of use, and we have in its room a multiplicity of terms—lupus disseminatus, hypertrophicus, verrucosus, papillomatosus, lupus vulgaire erythematoïde, and a host of others more or less scientific. While not questioning the applicability of many of these names, it seems to me that the enormous majority of the commonly occurring cases may be more simply grouped, and it is only with these commonly occurring cases and their treatment that I propose to deal.

Lupus is a disease which seems to be common property. It may be found in any ward in the Royal Infirmary with the single exception of the Lock, and many of the cases on which I have made observations were not under treatment in the skin department. It appears to be common in Scotland. I speak, of course, relatively, and my experience accords with the observation that it is more common in the female sex.

As to the age at which it occurs, modern scepticism is steadily breaking down the old view that lupus is a disease exclusively of the young. I have seen quite a number of cases in middle-aged and even elderly people, and I am convinced that mistakes in diagnosis sometimes are due to the still widespread belief in the old dogma.

The varieties which form by far the greater proportion of the cases which have come under my notice are three in number, and are, in their order of frequency—

1. The "ulcerating" form. For this form the name of lupus exedens is probably the best.

2. For the second I would suggest the simple name of lupus vulgaris. In this form the most prominent feature is the presence of the apple-jelly nodules of Hutchinson. These may be singly disposed or may run together into considerable areas. There is no "ulceration."

3. The third may, I think, fairly be described as L. fibrosus, or fibroid tubercle of the skin.

The first of these is common, and probably most typical of the general conception of lupus. The affected area, most commonly on the face, is covered with granulations from which issues a purulent discharge which dries up into a dirty scab.

Now, we are accustomed to consider these cases as *ulcerative*, and the granulations as identical, or nearly so, with those of a simple ulcer; but, so far as my observation goes, they present important differences. In every case which I have examined these "granulations" are covered by epidermis,—a swollen dropsical epidermis, which may only consist of one or two layers of cells, but is still detectable.

In one case where the ulcerative appearances were so marked that I removed the ulcer under the belief that it was a rodent, this condition was present. This observation confirms one already made to this Society by Dr M'Bride, some of whose sections I have examined, regarding lupus of the mucous membranes where this same condition is present.

A further interesting confirmation I have got from Prof. Leloir's monograph. Although he does not verbally refer to it, every one of his drawings of lupus shows epithelium present. Sometimes the granulations are so dropsical that they present the appearance of a myxoma; they may be so infiltrated with round cells as to suggest a round-celled sarcoma, but they are always covered with epithelial cells.

These epithelial cells are, of course, far from normal,—they are swollen, their nucleus often degenerating; they are loosely adherent, and they allow freely the passage of serum and leucocytes. So marked is this catarrhal process that the tubercular nature of the malady is sometimes almost obscured, but one can usually find at the lower border of the infiltration tubercle follicles with giant and epithelioid cells. The process is mainly a catarrhal one, and the question arises—To what is this due? It is, I believe, in no direct way related to the tubercular process, but is due to the action of other (pyogenic) organisms. This is, of course, no new doctrine, but to it and another observation of Unna's, made in another connexion, I would subscribe. The other observation is that these organisms do not penetrate into the deeper parts, but cause the catarrhal process by a chemiotactic action. Just below the surface may be found, surrounded by masses of leucocytes, large collections of chain and cluster cocci. I am, of course, very familiar with the fact that on the surface of the skin large numbers of organisms are found. These, however, do not belong to that category.

The second form is also very common, and may occur in any situation, though most common on the face. In it the tubercular process is practically unaccompanied by any secondary changes, and it may fairly enough be described as miliary tubercle of the skin, or, as I suggested earlier, as *lupus vulgaris* without any qualifying adjective.

It presents on examination enormous numbers of tiny tubercle follicles which, when they enlarge, show as the apple-jelly nodules, or may, by coalescence, form large areas of irregular shape. The skin is evidently unbroken and relatively little affected. The papillæ over superficial nodules are gone, but the layers of the rete still remain. If, however, a number of superficially-lying nodules coalesce, the nutrition of the epidermis is interfered with, pyogenic organisms find a habitat, and the case passes into the catarrhal form. In many cases, however, this does not occur, and the disease extends by the formation of new nodules until large areas are involved.

Many of the older nodules disappear, leaving in their place a scar, but it is a scar which is practically never a healthy one, and thus the area is always enlarging, the margin being the seat of the most active disease. The nodules vary in the depth at which they are situated. It does not seem reasonable to suppose that they have the power of locomotion, and thus becoming more superficial; but, of course, an increase of size would bring a part of the nodule near the surface. But sometimes the nodules are extremely superficial, and then the prognosis is all the more favourable.

As to the structure of the follicles, it is that of tubercle, consisting of giant and epithelioid cells. The only point in which I feel compelled to differ from some recent observers is as regards caseation. There is in the follicles a certain blurring of the outlines of the cells, which is no doubt of that nature, but I can find nothing at all comparable to the caseation occurring in other organs, such as the spleen. But this is hardly a practical point.

I enter on the consideration of the third class with some trepidation, for though the cases are not uncommon, my observations on them do not accord with those of the text-books. Neither Mr Morris nor Dr Crocker, the author of the most recently published works on dermatology, refer directly to them, and yet, to my thinking, they present both clinically and anatomically very marked characteristics. The cases to which I refer occur usually on the limbs, rarely on the face, and present the following characters:—The patch, usually single, varies in size from a sixpence up to six inches in diameter. It is red and often scaly, the skin is thickened and often thrown into folds, and when pinched up is felt to be very firm and stiff to the touch. Any appearance of lupus nodules is masked by the diffuse redness present, but the reddish pink colour of the centre is mingled at the margin with an orange hue. This, however, is not very evident, and such cases are quite often diagnosed as patches of chronic eczema or psoriasis. The buttock is not infrequently attacked. In three of my cases it has been the seat of the disease, and in Leloir's monograph there is a fair plate of the condition.

None of my cases have shown any tendency to ulceration. They have slowly spread, but never, except under treatment, has there been the faintest tendency to break down. Now and then a small abscess, which I have traced to a softened tubercle, forms, but it rapidly heals.

It seemed to me that these cases presented good hope of cure by excision, and I have therefore had a pretty full opportunity of studying the anatomy of this form. The essential part of the process is, of course, the formation of tubercle, but these are comparatively few in number; and they are imbedded in a densely thickened corium, a thickening due to the increased formation of fibrous tissue. Here and there the softening of a tubercle is observed much more often histologically than clinically, and they would appear, many of them, to be absorbed. This must also be the direct fate of many of the tubercle follicles, for they are very much more abundant at the margin than at the centre of the patch, while the condition of the fibrous tissue is reversed.

The papillæ of the skin appear to be increased on account of an increase in the interpapillary processes of the rete, but there is no true increase of the papillæ. That belongs to another and fortunately rarer form of this disease. Sometimes the horny layer is excessively thick, a condition which may be noted clinically. But the essential characteristic of this form is the great increase in the fibrous tissue of the corium, an increase which must be due to the stimulation of the tubercular poison, and which I think warrants the application of the term L. fibrosus.

As to treatment, our aim, of course, is in all cases the destruction of the tubercle bacillus either by direct or indirect means, but the same methods are not equally adapted for all cases, and in our warfare against the disease we must not forget, as Mr Morris sagely remarks, that there is a patient behind it.

As to any internal treatment, I use only one remedy, viz., cod-liver oil, and it can only assist other measures,—it will never cure the disease. Many drugs may be indicated by the condition of the patient, and my remarks on their general uselessness only apply to those cases where the patient, except for his lupus, is in good health. Of the thyroid treatment recently recommended by Dr Bramwell, I have so little experience that I prefer not to pass any opinion. But that the case on which he first tried it, and which I saw once before sending to him for admission, was enormously improved I am most ready to admit.

Local treatment is absolutely essential, but the principles which should guide this local treatment are to my mind not sufficiently defined; and I think it is possible to lay down some general rules which may guide us in the treatment of particular cases.

Of course, excision where possible would, if satisfactory, be the best treatment. But my experience has not been altogether happy. Some of the cases have relapsed, though some have apparently been cured. In a case which I have here to-night, Mr Miller kindly excised a patch rather larger than a crown. Although the wound did not look at all nice at the time, the result is remarkably good. I would not go so far as to say that there is no tubercle present, but I can observe no evidence of it.

Of one thing, however, my experience of excision has made me very sure, and that is that excision must be very wide. In examining the removed portion I have always found small tubercles perilously near the track of the knife, although the incision was to all appearance quite clear of the disease.

In using other forms of local treatment our aim is the removal or destruction of the tubercle bacillus, and as we cannot see it we must be guided by the evidence of its presence—the tubercular nodules. Now, it is to me, at least, evident that simple scraping, *the* favourite remedy, as I suppose I may call it, is not equally applicable to all cases. It removes all the soft cellular tissues which lie on the surface, but as soon as the spoon reaches formed connective tissue, nothing but undue force will enable it to remove any more. Yet tubercles lie in this tissue, which as time goes on grow and multiply, and the case, temporarily improved, is in time as bad as ever again.

I hope I have made it clear, in speaking of the varieties, that these are due to secondary changes exclusively, the tubercular element being the same in all. I endeavour to make treatment follow these lines, and first aim at removing those secondary changes, thus bringing the skin into a condition as nearly normal as it is possible for an organ affected with tubercle to be, and then I attack those tubercles.

In the ulcerative form we have a large amount of a loose œdematous cellular tissue, a condition brought about by secondary infection. This condition may be removed by prolonged antiseptic dressing, as by Brooke's ointment, but is much more rapidly and efficaciously done by the spoon. After the part has been thoroughly scraped, some further benefit may be attained by the application of nitrate of silver, sublimate, pyrogallic or carbolic acid. By this means all the secondary products and a considerable amount of tubercular tissue is removed.

In the nodular or apple-jelly form of the disease no secondary process is present, but the nodules are present in such numbers that it would be an almost hopeless task to endeavour to destroy them individually, and their number may be reduced by the application of one or other of the selective drugs which destroy the weakened tubercular tissue, and have comparatively little effect on the healthy skin.

The treatment of the fibroid form of the disease by scraping demands an amount of resolution and an expenditure of energy which is but poorly rewarded by the result. Here, too, I try to get rid of the secondary change, the formation of fibrous tissue, before directly attacking the disease. The method I have found most useful in that respect is blistering, and I believe that the reputation of many of the applications in lupus is dependent to a large degree on their counter-irritating properties. The effect of repeated blisters is to remove much of the thickening and bring the nodules to sight. The action is no doubt somewhat similar to the congestion method of Bier, for blistering causes severe local congestion, and I gather from Mr Miller that it is in these fibroid cases that most benefit results from Bier's method.

Finally, having reduced the nodules in number and brought them to view, I proceed to destroy them, and without detaining the Society by a discussion of the different methods, I will simply say that I find the cautery the most satisfactory weapon. I use either a fine Pacquelin or the galvanic cautery, and I am inclined to give the preference to the latter. It does not seem to destroy much, but a few days after quite a considerable slough separates, and recurrences are, I think, less frequent after its use. Recently, when only one or two nodules have remained, I have used electrolysis, but it is not applicable to large areas.

The great remedy for lupus is perseverance. Whatever be the original form of the disease it must be followed through until the last tiny nodule has disappeared, and this demands much patience on both sides. I never now undertake the treatment of a case without explaining to the patient or the friends that a prolonged course of treatment will probably, or rather certainly, be necessary. No single operation except the most heroic excision can possibly cure the disease.

I have only been able to indicate a few general views on the subject, and have had to leave much untouched. The selection of a particular selective drug is one of much import, for all cases do not do equally well on the same. I hope, however, that I have made clear the anatomical difference between those common clinical varieties, and that these differences may be found useful as indicating the lines along which treatment should proceed.

Note.—Thyroid Treatment. Since writing this paper I have had further opportunities of observing the effects of this remedy, and as it is at present the object of so much attention, it is perhaps as well that I should state the results of these observations. Considerable improvement is usually produced, but this improvement is in the disappearance of those secondary changes to which I have referred. The effect of the thyroid is to reduce the catarrhal to the simple form, but I question very much if the tubercular process is appreciably affected, and the surgical methods are so very much more expeditious that they will usually be preferred. But in some cases I believe it may prove of use, and it certainly deserves further investigation.

VI.—PATHOLOGICAL REPORT OF DR BYROM BRAMWELL'S CASE OF CANCER OF THE BREASTS, SPLEEN, ETC.

(*Vide* this Journal for July.)

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PARTS of the mammæ, lung, heart and pericardium, liver, spleen, suprarenal bodies, kidneys, peritoneum, stomach, dura mater, and bone marrow were selected for microscopic examination. They were fixed in corrosive sublimate, hardened, embedded in paraffin, and cut with a rocking microtome. The sections now shown were stained with logwood, rubin and orange, and with binodi; and the following is a synopsis of a more detailed account prepared by me of the main changes observed microscopically, and of the many questions of pathological interest suggested by the facts of the case:—

The Mammæ.—As seen under a low power, a general and somewhat diffuse infiltrating cancer is disclosed. The striking nodular appearance to the naked eye is now hardly so apparent, but distinct foci are everywhere visible, with spreading margins and communicating chains, between which are areas showing the normal secreting gland-tubes and their ducts. These are separated from the cancerous growth by well-defined and dense fibrous bands in some places, while in others only a slight barrier of fibro-cellular tissue intervenes. The secreting cells of the gland have not taken the stain well, their protoplasm being pale and their nuclei indistinct. The duct epithelium, on the other hand, has mostly stained well, its nuclei being clear and distinct. The pre-existing bloodvessels of the gland, wherever visible, seem to show a considerable thickening of their adventitia. No cancer cells can be detected in the lumen. The outlying lymphatics are occasionally seen to contain a few cancer cells, never so numerous as to form a complete plug. The cancerous foci are of varying size, and show a considerable variation in the amount of their fibrous stroma and in the size of their alveoli. Towards the centre the fibrous stroma is mostly denser than towards the periphery, and the alveolar spaces are mostly small. Some are long and tubular, others short and irregular. Their infiltrating margins scarcely show a distinct alveolar arrangement—rather an ill-defined, somewhat delicate network. Bloodvessels are sparsely present in all parts of the growth. The cancer cells are nearly all remarkably small. Some alveoli, especially towards the periphery, contain only two or three, others contain many. Those towards the centre of some of the foci are apparently much degenerated. While a few of the cancer cells are fairly large, each with a well-defined nucleus, sometimes two, and distinct protoplasmic substance, the great majority are smaller than leucocytes, with very little protoplasm and large clear nuclei. The cancerous nature of the growth is undoubted, but it is not at all typical; in places it is distinctly of the scirrhous, and in others of the encephaloid type. Its appearances and extensions indicate that it is of comparatively rapid growth, that its cells are prone to degenerate, and, being carried by the lymphatic vessels of the gland, have everywhere along the course of these vessels been deposited as cancerous thrombi, which have formed the centres of new foci.

The Lungs and Pleuræ.—The deeper layer of the visceral pleura is everywhere implicated by cancerous growth. The lymphatics are extensively and apparently universally filled with cancer cells, while at close intervals there are little areas of cancerous growth around them, consisting of fairly well-formed alveoli, more or less completely filled with the same small form of cancer cells as were so plentifully observed in the mammæ. In some of the alveoli they show a tendency to form a lining to the spaces. This cancerous infiltration is seen throughout the thickness of the pleural membrane, but is always most marked towards the deeper layer. It encroaches, but only slightly, on the lung substance in certain parts, and shows some tendency to pass along the lymphatics of the interlobular septa. There are no cancer cells in any of the bloodvessels so far as can be seen, although some of the vessels showing cancer cells abundantly also show red blood corpuscles. This obviously suggests that such vessels may be small veins; but I am rather inclined to look upon them as lymphatics into which small hæmorrhages have taken place. The parietal pleura did not differ materially from its visceral layer. In no part of the lung substance was any separate cancer nodule or growth detected, though a few small black nodules, which lay in the deeper layers of the pleura and in the lung substance close to it, showed a much pigmented fibrous tissue, with cancerous implication here and there.

The Bronchial Glands.—They were implicated to a varying extent,—in parts showing an extensive growth of small-celled cancer, and in others scattered foci of the same nature. Their capsule was not thickened nor their surface irregular. There was no sign of tubercle throughout the glands.

The Heart and Pericardium.—The general structure of the pericardium and epicardium was unaltered, but everywhere along the latter were nodules of cancerous growth, some of which were quite invisible to the naked eye, and others easily visible. At these sites the epicardium was increased in thickness, diminishing to its normal between the separate foci. None of the sections showed any continuity between the separate cancerous foci, which were as distinct microscopically as they appeared to be to the naked eye. The structure of each focus is not that of typical cancer. It shows a general cancerous infiltration of the lymphatic and tissue spaces lying between and around the fat cells of the deeper layer of the epicardium. Towards the surface there appears to be a new formation of a fine cancerous stroma, but it is confined to the deeper layer of the epicardium, being in no part seen to invade the denser superficial layer. Towards the muscular substance there is no infiltration along the intermuscular septa, and there is no implication of the muscle substance. The cancer cells are here also very small, but they stain better than those of the mammæ, and appear to show much less degeneration. On the endocardial surface, towards the base of one of the papillary muscles of the left ventricle, a single cancerous nodule can be detected. It is composed of a finely fibrous stroma, with small alveoli filled with the same small vigorous-looking cells as are seen in the epicardium.

The Liver.—A considerable variety in the structure of the nodules is seen. The larger ones are much degenerated in the centre, and in parts there is much fibrous tissue. The liver substance around the nodules is acutely congested. Contiguous nodules, apparently separate to the naked eye, are now sometimes seen to be connected with one another, and such nodules often show a transition of structure from that of an adenoma to that of an ordinary so-called alveolar cancer. Thus in places the alveoli are lined by a single layer of cubical cells giving the appearance of glandular ducts; in others, while the wall is lined by a regular layer of cells similar to the last, the lumen also contains cells arising from proliferation of the lining layer, and still further away typical alveoli filled with cancer cells appear, showing a cancerous structure of the characteristic encephaloid type. The cancer cells are mostly small, closely resembling those already observed in the mamma, pleura, and epicardium. No large cells and no giant cells are anywhere visible. The lymphatics of some of the portal spaces, especially around the portal veins, are engorged with cancer cells, but the distribution is far more extensive than a mere lymphatic distribution alone could account for. The polymorphic and metamorphic character which cancer in the liver not infrequently assumes is well represented here.

The Spleen.—Sections were taken from many different parts, some involving the capsule, and others deep in the substance of the organ. A comparison of these sections reveals several questions of much interest in relation to the lymphatic and vascular distribution of the cancer cells. The subcapsular lymphatics seem pretty generally filled with these cells, but they are by no means confined to them. However well defined the separate nodules appeared to be to the naked eye, few of them are seen to be so now. A well-defined cancerous stroma is the exception, so that in very few places indeed is the structure of typical cancer revealed. Here and there, however, the alveoli are well formed, their walls of considerable thickness, and their included cells of large size. In most places the alveolar walls are delicate and their cavities small. The cancer cells are of the same small size as have been already seen to prevail elsewhere, though, as in the liver and epicardium, they stain better than in the mammæ. The peripheral alveoli seem to communicate freely with the small venous sinuses of the pulp, as it is difficult to say whether some of the small spaces are cancerous alveoli with hæmorrhage into them, or small venous sinuses infiltrated in part with cancer cells. There are many leucocytes also in the spaces towards the margins of the foci, indicating the probability that many of these are really cancerous infarctions. Some of the larger veins of the splenic pulp appear to contain small cancer cells. The Malpighian bodies, wherever recognisable, seem to be unaltered.

The Suprarenal Bodies.—They are seen to be unequally implicated; in places there is no normal gland structure left, while in others it is clearly visible, being infiltrated on all sides by cancerous growth. The former show the older growth. The alveolar spaces are large, often rounded, and their walls are well formed and fibrous, but their included cells are mostly small, with a single clear nucleus and one or two nucleoli. This distinct alveolar arrangement gradually becomes less and less distinct where it merges into the general cancerous infiltration above mentioned. The capsule of the suprarenal is not much thickened, while the fibro-cellular and glandular tissues around the body are all extensively infiltrated with the same diffuse cancerous growth.

The Kidneys.—Separate nodules are seen in the capsule and invading the kidney substance. Other small ones are seen in the superficial cortex and in the mucous membrane of the calyces, and so implicating the apices of the pyramids, but none are seen embedded in the substance of the pyramids. These nodules are nearly all of the same structure, and more clearly circumscribed than they are elsewhere. The alveoli are mostly fairly well formed, and the cells are small, sometimes forming a distinct lining for the spaces, at others filling their entire extent. The Malpighian bodies are slightly congested. The straight vessels are also congested. The cells of the convoluted tubules are fatty. None of the vessels can be seen to contain cancer cells.

The Pancreas.—A number of minute rounded areas, invisible to the naked eye, are seen to be scattered irregularly through the substance of the organ, as well as beneath the capsule. They consist of alveoli, with delicate fibrous walls containing numerous small epithelial cells. Neither the bloodvessels nor the lymphatics of the gland seem to contain any cancer cells, and the nodules are sparsely and irregularly distributed.

The stomach shows a few small and similar nodules in its submucous tissue.

The Dura Mater.—The nodules upon the inner surface are seen to consist of a profusely growing cancer, more dense in its deeper parts than near the arachnoid surface, where it is delicate and spongy. Towards this surface the cells are abundant, and the stroma is delicate and scanty, but further out well-formed alveoli are seen, containing the characteristic small cells already observed to be mainly present in all the organs. At the thickest and central part of each nodule the whole structure of the inner part of the dura is replaced by this cancerous growth. Close to the internal surface a few large sinuses filled with blood are seen to lie among the cancer cells. At the periphery of the nodule the thickness gradually diminishes, and there is a transition into the normal membrane. The outer layers of the dura, which is apparently nearly smooth on its cranial side, are seen everywhere opposite the internal nodules to contain spaces filled with cancer cells. These spaces seem mostly to be lymphatic vessels and tissue spaces injected with cancer cells, but here and there small nodular formations appear, similar in character to those so plentifully visible upon its inner face.

The Bone Marrow.—Many small nodules similar in character to those in the spleen are seen. The cancerous tissue entirely replaces the bone marrow, and consists of the same delicate stroma and abundant small cells. Towards the oldest part of the growth in the upper part of the femur there is much dense fibrous tissue, and few cells, which are of larger size than elsewhere. This growth is here seen to implicate every part of the bone and its periosteum, while in the lower more quickly growing parts isolated nodules are well seen, though their margin fades indefinitely into the red marrow.

REMARKS.—The striking appearance of both breasts is one of the most remarkable points in this remarkable case. The clinical history seems to indicate that the left breast was the starting-point of the disease, for the patient accidentally noticed the presence of a lump in it as early as May 1890, or nearly three years before her death. This lump was about the size of a walnut when first noticed, and appears to have been in and remained in a quiescent condition, for she stated that it did not increase in size, or materially alter its character up to and after the time of her admission in January 1893, under Dr Bramwell's care. It was not until October of 1892 that new lumps appeared apparently simultaneously, so far as patient herself could determine, in both breasts. I did not detect this original lump at the time of the section, and the parts selected for microscopic examination did not include any of it, so that I am so far unable to say whether it corresponded in structure to that of the other nodules or not. The length of time intervening between its appearance and that of the other nodules only suggests the possibility of their having an independent origin and structure.[1] There is no doubt whatever that one or both breasts were the primary seats of the cancer. I do not know of any instance in which the breast has become affected with secondary cancer. No such case has been recorded, if we except the instances of one breast becoming affected from the other, either before or after removal of the latter, although secondary nodules formed by lymphatic metastasis in the same breast are demonstrable in everyday experience. It is practically impossible in this case to say whether the disease began in the one breast and spread over to the other, or began in both simultaneously. The appearance of small cancerous nodules in chains between the two breasts may be equally indicative of a spread from a primarily to a secondarily infected organ, or a mutual inter-communication between two primarily infected organs. On either supposition the condition is a rare and remarkable one. The occurrence of more than one palpable primarily malignant tumour in one breast is in itself one of extreme rarity, if indeed it ever occurs; and even in cases in which they are said to have been observed, they have occurred as quickly growing nodules which soon coalesced. I do not here refer to the small and obviously secondary nodules so often seen and felt at a distance from the main tumour in a breast *after it has been removed.* For it will be remembered that the number of separate visible and palpable tumours in each breast before its removal in this case was very great. Nor do I mean to state that all these nodules were of primary growth, for the great majority were, as their clinical history, size, and microscopic characters showed, of undoubtedly more recent appearance and younger growth, and it is now practically impossible to say whether more than one was primary. The primary nodule or nodules had thus given rise to secondary and separate nodules in the same organ by a true metastasis which was mainly, if not entirely, by means of the lymphatic vessels. These were seen microscopically to contain cancerous plugs, partially filling them, and it is possible that some unusual particulate or chemical irritant derived from the cancerous growth in its course along the lymph stream in advance of the cancer cells, set up an irritation of the endothelial lining of the lymphatic vessels, causing some alteration in them which favoured the frequent and abundant settling down of the cancer cells upon their walls, and that such cancerous thrombi formed the nuclei of new nodules. The chains of nodules radiating towards the axillary glands on the outside, towards the neighbouring breast on the inside, towards the clavicles and neck above, and towards the lower part of the thorax below, are further evidence in the same direction. In regard to the last position, however, there arises this difficulty, that if the nodules result from a transportation of the cancer cells by the lymphatic vessels, such transference must have taken place in a direction contrary to that of the normal lymph stream. It is well known and recognised that bacteria may travel along the lymphatics in a direction contrary to that of the lymph stream, but it does not follow that non-motile cells can do so. This difficulty is most easily met by supposing that from some cause the normal direction of the lymph stream upwards towards the axillary glands had been reversed. Such a condition is generally seen in the superficial veins of the thorax when the superior vena cava is obstructed. If such were the case here, it is easy to understand how the nodules around the umbilicus and those among the inguinal glands arose, for the lower thoracic lymphatics cross and mingle above the umbilicus with the superficial lymphatics of the greater part of the surface of the abdomen, which descend and converge towards the superficial inguinal glands lying along the line of Poupart's ligament. If this supposition be not correct, I can see only other two ways of accounting for their presence. 1*st*, By direct invasion. This might be aided, wherever possible, by the lymph stream, and in other places the line of communication between the separate nodules, although invisible to the naked eye, might be sufficiently obvious microscopically. *2nd,* A late deposition into the lymph spaces after a transportation of the cancer cells by the systemic bloodvessels, and the formation of cancerous thrombi. It is noticeable that many of the nodules exist where no lymphatic glands are normally found, but this might easily be explained by the supposition that new or evoluted lymphatic gland foci had been found in these positions, a condition which Stiles[1] has shown to probably frequently occur in relation to the spread of cancer.

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[1] At the meeting at which this paper was read, Mr Stiles, to whom the left breast had been given for examination, stated that this primary nodule was a simple fibroma. This case, therefore, adds another instance of the comparatively rare association of a benign and malignant tumour in the same breast.

I have now to consider the method of spread to the parietal and visceral pleura. How is the apparent limitation to the lymphatic vessels and spaces and their neighbourhood in these membranes to be explained? Three possibilities present themselves. *1st,* A direct transference from the mammæ through the chest wall to the parietal pleura. It is impossible for this to have taken place through the normal lymphatic channels, for the retromammary lymphatics all communicate with the lymphatics of the deep fascia which pass as large trunks to the lymphatic glands of the axilla, and do not in any way communicate with the lymphatics of the pleura. There remains, then, only a direct and continuous invasion of the pectoral muscle and its underlying tissues the intercostal muscles and the pleura. In support of this view it may be noticed that I found small nodules in and below the pectoral muscles and others attached to the periosteum of the ribs. On the other hand, these nodules were often some distance apart, and had apparently no connexion with one another, and may have been due to infection through the circulation; further, those in the parietal pleura were not more numerous underneath the position of the mammæ than elsewhere, and there was no sign of extension from the outer to the inner layer at the root of the lung. Moreover, the cavity of the pleura, into which the cancer cells were probably freely discharged, does not communicate with the lymphatics of the visceral layer, as is so clearly shown in an ordinary carbonaceously pigmented lung where the carbon particles are freely deposited in the lung tissue, and often abundantly in the subpleural tissue, but never in the sac itself. Quain, vol. ii., p. 503, says the lymphatics do communicate by means of stomata with the pleural cavity. The affections of the visceral from the parietal layer, which, it will be remembered, were not in the slightest degree adherent to one another, might be explained by an auto-inoculation. That such a method of inoculation is possible where surfaces constantly rub against one another is illustrated by a cancer of the posterior wall of the bladder giving rise to a secondary growth on the anterior wall. Coats[2] mentions this condition, but the whole question of the possibility of inoculation of cancer is still unsolved. Many experiments have been performed upon animals, and even upon man, but their result has hitherto been negative. The most recent experiments by D'Arcy Power[1] have so far given promise of a better issue, but in the present case the far greater extent and amount of the infiltration of the visceral as compared with that of the parietal layer would in itself contradict it even were the possibility of such an inoculation allowed. *2nd*, An extension from the peritoneum through the lymphatics and tissues of the diaphragm. I have frequently seen this method of spread, but in such cases the parietal pleura has been more especially affected. The visceral layer can only be affected by an extension first to the root of the lungs and thus to their serous covering, or by a direct invasion by the cancer cells free in the pleural cavity. *3rd*, A distribution by the blood. The cancer cells can reach the blood only by passing along the lymphatic vessels to the lymphatic glands, where they generally remain for a long period, but after a time they make their way by direct extension into the small veins of the gland, and thus reach the systemic veins. Since the lymphatic glands act as sieves, none or few of them will be allowed to pass onwards into the thoracic or right lymphatic duct, and thus into the large systemic venous trunks. They thus reach the right side of the heart and pass by the pulmonary artery to the lungs. The cancerous emboli may stick in any part of the pulmonary capillaries, and thus form secondary nodules in the lungs, but it is to be remembered that the pulmonary capillaries are wider than those in any other part of the body, and that it is therefore possible for small emboli to pass through them, and thus reaching the systemic circulation, pass to the brain or other organs, and there give rise to the phenomena of embolism or of infarction. In this case no nodules were observed in the lung, and the cancer cells must have passed freely through the pulmonary capillaries, a course which their very small size would certainly favour. Now, it is to be noted that the capillaries of the deeper layer of the pleura come from the bronchial arteries, and, though the two systems freely anastomose, especially around the terminations of the bronchial tubes, they are not at all likely to have received such a plentiful cancerous stream from the pulmonary capillaries. This would necessitate a transportation of the cancer cells into the pulmonary veins, and thence to the left side of the heart and systemic circulation generally, when they would pass along the bronchial arteries to their capillaries. This would explain also the cancerous condition of the bronchial glands which the bronchial arteries supply. It is quite possible that the cancerous infiltration of the visceral layer of the pleura was brought about through both these channels, and that once it gained a footing it spread rapidly by continuity and by invasion of the lymphatics to bring about the general cancerous infiltration observed in that membrane.

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[1] *Transactions of the Medico-Chirurgical Society of Edinburgh,* 1892, pp. 58, 59.

[2] *Manual of Pathology,* 1889, p. 264.

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[1] *British Medical Journal*, 1893, vol. ii., p. 830.

The affection of the epicardium is probably to be explained much in the same way, although its limitation is certainly curious. These membranes, the pleura and the pericardium, especially the former, are comparatively commonly the seats of secondary cancer, while it is stated by competent authorities that primary cancer does not occur. Coats, Harris, and others, however, mention cases.

The liver is probably the commonest site of secondary cancer. It is easy to understand why this should be so, on account of its double blood supply through the hepatic artery and the portal vein; and further, on account of its close contiguity to such frequent sites of primary cancer as the stomach and pancreas. In this case the infecting cells have reached it through the medium of the hepatic artery, and the appearances presented by the diseased organ are in many respects exceptional ones. The immense number and small size of all the nodules present an unusual feature, for it is much more common to find one or more of them of much greater size than the others, and this is especially the case when the primary seat is in some contiguous organ.

The failure of any of the nodules to project beyond the capsule of the organ, so that its surfaces were quite smooth, is also an unusual occurrence, which I have met with on only a few other occasions. The change of type in the microscopic characters of the nodules is another noticeable feature. It is a general pathological law that secondary cancer growths reproduce the structure of the primary tumour, even in its more minute details. They tend to imitate them in the shape, size, and character of their cells, in the amount and arrangement of the fibrous stroma, and even in the character of the vessels. It is a law not without exceptions, as the present case illustrates, and I have seen other instances of a corresponding metamorphoses. So far as primary cancer is concerned, the liver is not a common site. It is, however, not uncommonly met with, and usually presents the unusual picture of a large primary and smaller secondary and separate tumours existent in the same organ.

The spleen is the rarest organ in the body to be affected with cancer. There are a comparatively few cases on record altogether, and these are mainly in connexion with cancer of the stomach, where the disease spreads into the spleen by direct implication. I have myself seen such a condition, and also an implication of the capsule invading the substance to some extent; but I have never seen anything like the general and diffuse nodular infiltration which occurred in the present case; and so far as I have yet found, no similar case is on record. The greatly enlarged condition of the organ, with a retention of its normal shape and perfectly smooth surface, are additional rare characters. I have seen a cancerous nodule existing in the centre of a large infarction in the spleen in a case of cancer in other abdominal organs, and again in a similar case an infarction of this organ which was regarded as cancerous until microscopic examination disclosed its perfectly simple nature.

Part of Dr Russell's most careful work on the fungi (fuchsin bodies) present in cancer cells was done from a study of sections of cancerous nodules in the spleen which he observed in two separate cases. It is extremely difficult to understand why this organ is so rarely affected with secondary cancer. It may be that the periodic and constant contractions of the organ prevent the settling, and further favour the expulsion of the invading cancer cells; but against this we have to place the great frequency of the occurrence of simple infarctions, the result of the impaction of other emboli in the end arteries of the organ. It cannot be said to be due to the small size of the emboli in the case of cancer, for this would be equally efficacious in preventing the occurrence of secondary growths in all other organs except the lungs; further, we may add that in this particular case the size of the cancer cells in the spleen and elsewhere was unusually small. Perhaps some explanation may be found in the peculiar vital resistance or active destroying power on the part of the splenic tissues themselves. It is well known that many organisms are destroyed in their passage through the spleen, and many septic emboli succeed in producing only simple and not septic infarctions of the organ.

I have not been able to find any authentic record of primary cancer of the spleen. Some of the reported cases were published before the time when the distinction between cancer and sarcoma was made, and others have been recorded in provincial journals in America, which I have not been able to consult. If we accept the view generally upheld by pathologists, that cancer can take its origin only in tissues derived from the epiblast or hypoblast of embryonic life, then we must deny the possibility of the occurrence of primary cancer in the spleen, inasmuch as it is entirely derived from the mesoblast. Its occurrence might even then, however, be accounted for by the inclusion theory of Cohnheim. The spleen is developed in the substance of the mesogastrium, apparently in the same mass of mesoblast as that in which the pancreas takes its origin, but without the hypoblastic evolution of the latter organ. It is possible to assume an inclusion of this in the separation of the spleen, and that cancer might subsequently spring from this "embryonic residue." Recently an excellent paper by Harris on "Primary Cancer of the Pleura," in the *Journal of Pathology* for November 1893, supports the contention that mesoblastic cells may under certain circumstances take on the characters of those of the epiblast or hypoblast, and thus independently give rise to cancer growth.

The lymphatic glands, while they are extremely frequently the seat of secondary cancer, are in the same position as the spleen in their relation to the primary form.

The left femur was apparently the only bone affected in this case, and the condition of the upper part of the shaft presented most unusual characters. The amount and density of the sclerosis of the whole thickness of the shaft, and its periosteal thickening in this position, were most remarkable. The lower part of the shaft, with its many separate and small cancerous nodules in the marrow, afforded a familiar enough appearance, and indicated a rapid growth totally unlike that of the upper part, which was of a chronic character, and must have been of some standing. The clinical history states that for a month prior to the patient's admission to the hospital, *i.e.*, five months prior to her death, she had been unable to walk without assistance, owing to the pain in the left hip and thigh. The pathological appearances of the upper part of the bone quite warrant this age being put upon them. The frequent affection of the bone marrow by secondary cancer is curious when the close resemblance between its structure and that of the spleen is considered. Besides the bone marrow it often occurs in the cancellous tissue of the ends of the bones, of the ribs, and of the vertebræ. Erichsen gives four cases occurring after excision of the breast, and I have seen it occur also in cancer of the stomach. Primary cancer is reported by several careful observers to take its origin in bone, and quite a number of such cases are recorded; however, as bone does not contain any epithelial cells, we are met with the same difficulty as in the spleen and lymphatic glands. It may, however, be practically primary in the jaws.

Secondary cancer of the suprarenals is not uncommon. It is most often seen as a single nodular mass occupying a considerable part of the organ, with smaller nodules in its neighbourhood, and arises by direct extension from the stomach, pancreas, etc., or by secondary or tertiary infection. Primary cancer is rare. I have seen one instance of a very large tumour of this nature, a malignant adenoma.

Secondary cancer of the kidney is also not uncommon, and generally arises through a tertiary infection. Primary cancer is rare, and when it does occur is most frequently of the encephaloid type. I have met with instances of it, of scirrhus, and of the malignant adenoma.

Secondary cancer of the stomach is extremely rare, while the primary form is equally common. Secondary cancer of the ovaries is comparatively common following upon the disease in the uterus and other parts, and is generally double, as in the present case. Primary cancer is not common.

The condition of the dura mater is a most curious and interesting one. It is rare to find secondary cancer affecting the membranes of the brain or the brain itself, and when it does so it is usually associated with the disease in the cranial bones. I have seen one such case follow cancer of the stomach. It is further interesting to find the pia-arachnoid quite free, although from the extensive infiltration of the dura-arachnoid there must have been a plentiful distribution of cancer cells in the subdural space. Primary cancer of the dura-arachnoid has been described, being of the nature of an endothelioma arising from the arachnoid layer. It is rare.

A general consideration of the distribution of the cancer in this case excellently exemplifies the belief that the sites commonly affected by secondary cancer are rarely affected by the primary disease, and *vice versa*, for the breast, cervix uteri, stomach, rectum, the lips, tongue, testis, skin, penis, prostate, bladder, and œsophagus, are favourite seats of primary cancer, and in many of these secondary deposit is unknown, and in all of them it is of very rare occurrence.

VII.—THE PHYSICAL EXAMINATION OF THE SPLEEN AND KIDNEYS.

By Alex. M. Stalker, M.D., C.M., Dundee.

The clinical examination of the spleen has been practised for a long time. The method used at first was mainly that of percussion. It is only within the last ten years that palpation has come to be generally employed in this connexion, and the extent to which an enlarged spleen is palpable does not yet seem to be correctly indicated in the text-books. The value of the method is not measured even by the proportion of cases in which there is a positive result, because it is always much more interesting to employ two separate ways of finding out the same thing, and to have the results of the one way confirmed, corrected, or modified by those of the other than to be dependent on one way alone, and what is more interesting is easier and is more likely to be practised; and, in this country at any rate, there are indications that since palpation of the spleen came into use more attention has been paid to the subject in such diseases as enteric fever than formerly. I can only point to the statistics of the Middlesex Hospital and the Sick Children's Hospital at Pendlebury. We have detailed accounts of the enteric cases from these two hospitals extending over a number of years. In the years previous to 1883 the Middlesex statistics mention enlargement of the spleen but rarely, and only now and then that the organ is palpable, but in that year the notes are very full. Out of 115 cases, in 84 the spleen was noted as enlarged, and in 40 of these it is expressly noted that it was palpable. Those figures are not given to show the precise result of this method, because that will require more extended observation directed to this special point. They are merely adduced to show that examination of the spleen became commoner and excited greater interest when the double method of percussion and palpation came into systematic use. The same thing is taught by a study of the Pendlebury Hospital Reports from 1881 to 1886.

Every one is familiar with the details of splenic percussion. In a systematized examination it will take precedence of palpation, for its results may render the latter unnecessary. If there is no increased splenic dulness the examiner need not waste time over painful efforts to feel the organ; but if there is, and if the dulness comes down apparently to within an inch or two of the margin of the costal framework, this is the kind of case in which palpation comes in to carry conviction as to the exact condition. The certainty that feeling the edge of the spleen inevitably brings with it, so much beyond any assurance that we can gain by simple percussion, constitutes part of the value of the plan.

In palpation, the examiner stands at the right side of the patient's bed, and placing his warmed hand gently on the abdomen brings it into the left hypochondriac region, close under the ribs. If the enlargement is very distinct and the lower edge of the spleen projects constantly beyond the ribs, it may be felt now. But if not, the patient is directed to take a deep breath, when the spleen, if enlarged, will probably come down, striking with its firm edge against the palpating fingers. If this fails to give a positive result, success is sometimes attained by turning the patient well round on the right side and with the knees drawn up, repeating the procedure.

The hindrances to success can be fairly well classified. *First*, the abdominal wall may be passively rigid, either from muscular or fatty thickness, or from the tension of liquid effusion. The former of these conditions is the commonest and most important of all. It is present more particularly in men and in nulliparous women. There is no way of overcoming it, and we have generally, when the condition is well marked, to be content with percussion. The tension of liquid effusion is a common condition in cirrhosis of the liver, less common in the dropsy of cardiac failure,—both, especially the former, causes of enlarged spleen. As it hinders percussion also, the practitioner remains frequently quite in doubt as to the condition of the spleen until perhaps the complaints of the patient require a paracentesis. Not only does an effusion render palpation difficult, but it drives the diaphragm up, and, so to speak, imprisons the spleen out of reach. With this may be associated another obstacle. The ascites which supervenes in cirrhosis of the liver is often the result of peritonitis,—is, indeed, almost invariably so[1] when the patient survives for any length of time, and the spleen may be adherent to the diaphragm. An example of this came under my notice lately. A man of 72 years of age was admitted into the Dundee Royal Infirmary in August 1893, with slight jaundice, enlargement of left lobe of liver, and very large spleen coming down to an inch below the umbilical level and within three inches of the middle line. There was no ascites. The condition changed in no way till the end of December, when ascites set in, with inflammatory symptoms, and he got steadily and rapidly worse. Between that time and his death, on April 25th of this year, he was tapped five times. The spleen gradually withdrew under the diaphragm, and after the last two tappings could no longer be felt. Post-mortem there was found to be general peritonitis, and the spleen was firmly sealed up under the diaphragm, so that although 17 oz. in weight it was quite out of reach.

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[1] W. H. White, *Guy's Hospital Reports*, 1892, p. 1.

Secondly, we may have incoördination of the voluntary breathing movements, depriving us largely of the help of the deep inspiration which is generally a necessary part of the procedure. Some people, generally unintelligent people, cannot take a deep breath quietly, and require to be trained to it. But patience will in most cases overcome this particular hindrance.

Thirdly, breathing may be painful, and so shallow. In croupous pneumonia the spleen is said to be usually enlarged, but the rapid painful breathing makes palpation in general impossible. A case of pneumonia in which I remember to have felt the spleen most easily and distinctly was one of the right apex in which delirium tremens supervened about the fourth day. Crisis took place on the seventh day, and the man recovered without a bad symptom. But in the last three days, when the pneumonia and the delirium tremens were running side by side, the patient was wholly unconscious of any hindrance to breathing, and his inspirations were as deep as they could have been in health. Undoubtedly the man was assisted in his breathing by the fact that the pneumonia was in the apex. Had it been in the base, even the delirium tremens could hardly have given him the unconsciousness of pain necessary to enable him to breathe freely. And if a pneumonia be in the *left* base we have (*a*) the breathing as a whole restricted and shallow, (*b*) the movements of the diaphragm on the left side impaired more than on the right, and (*c*) the delimitation of the splenic area impossible even by percussion. I had under my care lately two cases of acute miliary tuberculosis of the lungs with all the usual indications. The spleen in the one was 10¼ oz., in the other 10¾ oz. in weight. In the first it was palpable and percussible; in the second it was neither. In the first, the tubercle was thickest in the right apex; in the second in the left base, where it had set up adherent pleurisy, and where the miliary nodules were present in such immense numbers that they had produced a kind of lobar consolidation, and distinct dulness on percussion. Again, as in the case of cirrhosis of the liver, a morbid condition presents difficulties on the one side to percussion and on the other to palpation.

Fourthly, there is tenderness of the abdominal wall. This may be merely a functional hyperæsthesia. But such a functional hyperæsthesia is not common in the whole class of cases in which enlarged spleen is met with. It is more usual to have to deal with true inflammatory tenderness. Such a case calls for, of course, very careful handling; but if it gets that, the tenderness is rarely so great or so long continued as to preclude ultimate success.

So much for the hindrances. But there are one or two phases of the morbid conditions which are attended with enlarged spleen which actually make its examination easier in the disease than in health. For example, it is probably rarely the case that the consistency of the spleen is a bar to its palpation. It is likely—indeed, it is certain—that in an acute illness a spleen increased in bulk to one and a half times or twice its normal weight is harder than normal, and has an edge much more easily felt. On examination after death the organ may be soft, the capsule wrinkled, and the pulp almost diffluent; but the organ in life, containing within an almost unyielding capsule much more than physiologically it is provided for, is very different in these respects from what it becomes after death.

A second circumstance making palpation easier in febrile diseases, if unconnected with the lungs, is the torpor and indifference, on the one hand, and the emaciation on the other, which are induced. Even in an affection like enteric fever, if there are no complications the abdomen is very easily palpated.

I do not know of any detailed observations as to the relative value of palpation in such diseases as enteric fever. Even the Middlesex Hospital Reports do not bear to have specially sought to elucidate this question. My own experience is but limited. It is based on records of eighty-three cases of enteric met with in hospital practice. Seventy of these occurred in women and children, and thirteen in adult males. Of the women and children, in forty-five the spleen was palpable at one time or other during the illness, in fourteen it was enlarged without being palpable, and in eleven no enlargement could be made out. Of the adult males, in five the spleen was palpable, in five merely enlarged to percussion, and in three no definite enlargement could be made out. I am pretty certain that an investigation undertaken from the first to settle the point by a trained clinical observer would improve considerably on this.

(*To be continued.*)

VIII.—THE RELATIONSHIP BETWEEN ULCERATIVE COLITIS AND GRANULAR KIDNEY DISEASE.

By Gilbert A. Bannatyne, M.D. Glasg., M.R.C.P. Edin., Hon. Physician Royal Mineral Water Hospital, Bath.

The following two cases are of interest in connexion with the recent discussion at the Royal Medical and Chirurgical Society, where various views with regard to the occurrence of ulceration of the bowel in conjunction with granular kidney disease were expressed. Dr W. W. Dickinson reported a number of cases in which he thought the intestinal ulceration was hæmorrhagic in character and secondary to the kidney trouble. He also reported some cases where intestinal hæmorrhages were noticed, but with no ulceration. In his cases the ulcers occurred in any part of the bowel, but most commonly in the lower part of the ileum. He noted that in many cases recent extravasations and pigmentations were frequently to be seen in the neighbourhood of the ulcers. In a few cases blood was found in the submucous tissues. In all these cases kidney trouble existed with heart or eye complications. He holds that intestinal ulceration therefore occurs as one of the cardio-vascular changes consequent on kidney disease. It is one of the late manifestations, and may lead to peritonitis and perforation. Dr Hale White, on the other hand, spoke of cases in which he found granular kidney disease in conjunction with one form of ulcerative colitis. In his cases there was marked colitis surrounding the ulceration, and he believed that the ulceration was primarily inflammatory, and that the hæmorrhage was only an indication of the severity of the disease. He also found ulceration of the small intestine, but the principal lesions were in the colon. During the discussion which followed, most of the observers stated that they had not seen cases such as Dr Dickinson reported, and therefore I look upon my two cases as of more interest. To me it appears that two separate conditions exist,—one that of ulcerative colitis in a patient suffering from kidney disease, and one that of chronic Bright's disease with intestinal hæmorrhage and ulceration. The first case, of which I give the history, was of the former class, and the second of the latter. Both cases were seen within a short time of each other, and the differences in the clinical and post-mortem features were most marked. In the first case the ulceration was very extensive, the ulcers being surrounded by extreme inflammation; peritonitis was marked and the perforations large. The mucous membrane was almost entirely disorganised in the colon, and although the ulceration was not entirely confined to that region, yet the principal lesions were. The ulcers were large, and had ragged edges, and to those present at the post-mortem it looked as if a most violent irritant had been applied. So trifling had been the kidney trouble that it was only discovered post-mortem. In the other case the kidneys were markedly diseased; there were eye troubles with cardiac hypertrophy, but the bowel condition was apparently of secondary importance. At the post-mortem the whole intestines, but more especially the small, were studded with hæmorrhages, chiefly submucous. They were chiefly small, and a few were associated with ulcerations, which gave one the impression of a breaking-down of a hæmorrhage rather than of an inflammatory condition. There was no peritonitis. At the time I classed the two cases as entirely separate,—the one being inflammatory and primary, and the other secondary, due to some arterial degeneration. To my mind, it is evident that two separate conditions exist; and as my two cases differentiate somewhat sharply between them, I thought they might be of interest to physicians.

CASE I. (*Ulcerative Colitis complicated by Granular Kidney Disease.*)—A man, aged 36, labourer by trade, came under my care in August. His family history was good. Some few years ago he suffered from an attack of bronchitis, which lasted all winter, but since then till January last he had enjoyed good health. In January he had an attack of diarrhœa, which lasted a week. It was not of a very severe nature, as he was able to carry on his work. He has never been out of this country.

When first seen he stated that he had been ill with diarrhœa for three weeks, and that as he had been told he was suffering from typhoid fever, he would like to be taken into the hospital. His attack, he said, began suddenly after a chill and wetting. His bowels had been moved on an average four times a day. The motions were watery, and occasionally contained blood. There was little tenesmus. He had a slight headache constantly, and an inclination to vomit, although actual vomiting had not occurred. He had not been laid up in bed during his illness until a week ago, when he was seized with a very severe attack of diarrhœa and hæmorrhage. He then saw his doctor, who recommended him to come under my care.

On admission I found him to be a pale, anxious-looking man, but one who had not the appearance of a typhoid patient. He complained of headache, nausea, thirst, and diarrhœa; his bowels being now moved eight or ten times a day, and the motions always contained blood, either clotted or fluid, also mucus in shreds, or else mixed with the fæcal matter. The motions, as a whole, were dark in colour, and were not formed; they had, however, a most offensive odour. Under the microscope, blood cells, pus, apparently intestinal, but certainly goblet cells, bacteria, cocci of sorts, and lumps of yellow-ochre curd were observed. The residue was dark brown in colour, with reddish streaks, due to blood, and small flakes of fæcal matter. The patient's temperature was usually 100° F. in the morning, running up to 103° at night. His pulse was weak and rather tense. His tongue was red and irritable along the edges, coated along the mid dorsum. There were also a few sordes. The abdomen was slightly distended, but was not tense. There was slight tenderness, especially over the descending colon and in the hypogastric region, tympanites on percussion, but no ascites. Liver and spleen were apparently normal, and no spots or enlarged glands could be detected. The heart-sounds were feeble, with slight accentuation of the second sound; lungs normal. His urine was copious, of low specific gravity, and contained a trace of albumen. No casts were detected on the day of admission. Nothing could be felt per rectum.

The patient was put on a careful diet, and various drugs were tried to check the diarrhœa, with partial success. The improvement, however, was only slight. At the end of a week he had gained a little, and his appetite had improved. The headaches had gone, and his nausea had lessened. The bowels were still moved loosely three or four times a day, but there had been no profuse hæmorrhage. On the eighth day, however, during the absence of the nurse, he managed to get some solid food, and shortly after was seized with violent griping pains. He became collapsed and weak. When seen that evening he was found to be in great pain, the abdomen greatly distended and acutely painful, and he was much collapsed. Shortly afterwards he died.

At the post-mortem I found the abdomen to be greatly distended, which collapsed on opening the cavity. There was marked peritonitis, especially round the cæcum and colon. There was not a great quantity of fluid present, but what there was gave off an extremely offensive odour, and much of it was mixed with the intestinal contents, which had escaped through the perforations. There were only a few adhesions. On removing the intestines four perforations were found,—two in the ascending colon, one in the transverse portion, and one in the sigmoid flexure. The two in the ascending portion were both nearly 1 inch in length, and had ragged and dirty-looking edges; the other two were smaller. On opening up the bowels the mucous membrane was found to be in an extraordinary condition. It was intensely injected, was soft and very friable, giving way under the slightest touch. Everywhere the colon was studded with ulcers, some large and some small. The small intestines were only very slightly affected, and that just at the junction with the cæcum. The ulcers ran sometimes longitudinally and sometimes transversely. They were irregular in shape, had dirty, rough floors, and in some cases extended almost right through the submucous layer, and looked as if very little would make them perforate. Some looked almost gangrenous. Each ulcer was surrounded by an area of inflammation; but so extensive was the disease, that little or no part of the colon was altogether free from it. I could detect no submucous hæmorrhage, nor was there any staining.

The kidneys were found to be small, and with adherent capsules. The cortex was diminished and redder than usual, and here and there small cysts were found. Under the microscope the usual changes were observed.

A small ulcer under the microscope showed that the surrounding tissues were infiltrated with round cells, and the bloodvessels were distended and engorged, but these latter did not show any perceptible fibrosis. Throughout the round-celled new tissue bacteria were seen on staining, but I could not identify them as either the typhoid or tubercular bacilli.

CASE II. (*Granular Kidney with Intestinal Hæmorrhages and Ulceration.*)—A man, aged 42, farm labourer, came under my care in September. He stated that for some years he had been subject to headaches, occasional vertigo, and palpitation. He also sometimes noticed slight puffiness of the ankles towards night. Shortly before he came under my care, he stated that the above symptoms had gradually become worse, and that he had been troubled recently with diarrhœa and bleeding per rectum. He had been in the habit of passing a large quantity of pale urine. He had scarlet fever as a child.

On examination I found him to be a pale, depressed-looking man. He now complained greatly of headaches, palpitation, and vertigo. He suffered from vomiting and diarrhœa. He had occasional attacks of hæmorrhage from the bowel. The blood came away usually bright in colour, the motions themselves being always dark; mucus was also seen in the stools. There was a good deal of œdema of the ankles, and, in the morning, of the face. He suffered from albuminuric retinitis, and there was undoubted hypertrophy of the left ventricle. His urine was more scanty, and contained a considerable quantity of albumen. Under the microscope granular tube-casts were detected. The quantity of urine gradually diminished, and as this occurred his other symptoms got worse, especially the diarrhœa and intestinal hæmorrhage. Bleeding occurred once or twice from the nose. The patient died within a month from uræmic poisoning.

At the post-mortem both kidneys were found to be smaller, heavier, and darker in colour than normal. Their surfaces were rough, and the capsules firmly adherent. On section the cortex was atrophied, and cysts were visible to the naked eye. Under the microscope the usual changes were noticed. The heart was enlarged as a whole, and the wall of the left ventricle much thickened. There was slight œdema of the lungs. On removing and opening the bowels numerous submucous hæmorrhages were seen, with here and there an ulcer. The ulcers were scattered throughout the intestines; they were small in character, except at one place, where two or three had run together. They were shallow, never extending through the submucous layer, and had not set up any peritonitis. They were not surrounded by inflammation. It was observed that the more recent ulcers arose in connexion with hæmorrhagic effusions,—the floor of some distinctly being a collection of blood. The small bloodvessels showed the typical thickening of the coats associated with this disease.

In some points these two cases differ from those recorded by Drs Dickinson and Hale White. In the first there could be no doubt that it was inflammatory in character; and although the kidney disease may have been a predisposing cause, yet I take it that it was a purely adventitious circumstance. Had there been any arterial changes, then we might have assumed that the bowel trouble was part of a more general disease, but as the usual cardiovascular changes were absent, I think I may rightly take it for granted that the ulceration was not due to any vascular condition but rather to an acute infective inflammation. Had there been any connexion between the two, I should in all probability have found traces of hæmorrhages old or recent in the tissues of the bowel. These were absent, showing that the blood which was present in the stools must have been due to ulcerative action. In the second case the arterial fibrosis, I presume, was the cause of the hæmorrhages, and I think the ulceration arose from the breaking-down of the mucous membrane over the hæmorrhagic effusions, and not from inflammation of its surface. That hæmorrhage occurs from the mucous surfaces in chronic Bright's disease no one denies, but cases where ulceration is present are rare. It is a little difficult to explain the sequence of events after the exudation has occurred. I lean to the opinion that in most cases where the exudation is large the blood supply of a larger or smaller piece of mucous membrane is cut off, and that this piece either dies or its vitality is so lowered as not to enable it to resist the poisons which we know always exist in the canal, and thus it falls an easy prey. Another theory is that the exudation itself forms a small abscess, and an ulcer naturally follows. Of these theories, I am more inclined to accept the first, as we have many parallels to go upon. Dr Hale White in his argument adduced the fact that ulceration does not follow other extensive hæmorrhages,—as, for instance, in purpura. In reference to this I may mention that both Zimmermann[1] and Immermann state that ulceration and gangrene of mucous surfaces do occur in purpuric submucal hæmorrhage. But even admitting all this, it only further proves to my mind that two classes exist, —one primary and inflammatory, the other secondary and degenerative.

IX.—NOTE ON THE PRESENCE OF DIFFERENT ALBUMOSES IN THE AMNIOTIC FLUID.

By A. LOCKHART GILLESPIE, M.D., F.R.C.P.E.

(*Communicated by* Dr J. W. BALLANTYNE *to the Edinburgh Obstetrical Society*, 14*th March* 1894.)

IN the course of an investigation into the presence of the different albumoses in effusions and transudations I had occasion to analyze three specimens of amniotic fluid, viz.—(1), The amniotic fluid from the sac of a cow at the first month; (2), human amniotic fluid at the third month; and (3) at the sixth month from a case of sudden death. All these specimens were analyzed immediately after withdrawal from the amniotic sac; in the third instance this was done at the post-mortem examination twenty-four hours after death. Traces of albumose were present in the second, and a comparatively large amount in the third example. There was none in the first. The albumoses were separated out in the usual manner with ammonium sulphate and chloride of sodium, and to make the investigation complete the other constituents were also estimated.

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[1] Ziemssen's *Handbuch*.

The following table gives the results. (I make no distinction between hemi- and anti- compounds.)

Character of Fluid.	Specific Gravity.	Water per cent.	Solids per cent.			Proteids per cent.									Total Proteids per cent.	Various.			Remarks.
						Coagulable.				Albumoses.									
			Total.	Ash.	Organic.	Total.	Albumin.	Globulin.	Mucin.	Total.	Proto.	Hetero.	Deutero.	Peptone.		Total.	Fat.	Urea.	
Cow. 1st month of gestation.	1014	98·74	1·26	·72	·54	...	...	...	...	...	...	...	...	0	0	·54	0	Trace.	Chlorine, ·461 per ct. Trace of urobilin.
Human. 3rd month.	1018	97·82	2·18	·76	1·42	·3819	·3819	...	...	Trace.	...	...	...	Trace.	·3819	1·02	0	·0734	...
Human. 6th month.	1018	97·59	2·41	·74	1·67	·7	·6	·08	·02	·1685	0485	·045	·075	·09	·9485	·6215	0	·1058	Urobilin present.

As pregnancy proceeded, therefore, the solids in the amniotic fluid, as has been shown before, increased. The increase in the inorganic solids was very slight. The organic solids at the end of the first month were wholly extractives. At the end of the third month, ·38 per cent. of serum albumin and ·0734 per cent. of urea were present, with a trace of albumose and peptone. The third, obtained after six months, on the other hand, contained ·7 per cent. of coagulable proteid, only ·08 per cent. of this being serum globulin, and ·1685 per cent. of the different albumoses, of which deutero-albumose was the most abundant. ·09 per cent. of peptone was present, and ·1053 per cent. of urea, as against ·0734 per cent. in the last instance.

The presence of the lower forms of the proteid bodies in the amniotic fluid is difficult to explain satisfactorily. I am inclined to ascribe it to the presence of digestive ferments in the fluid similar to those described as being present in pleuritic or ascitic effusions, and to the consequent digestion of some of the albumin present. Whether the ferments are derived from the blood of the mother or in some way from the fœtus is immaterial.

The methods used in separating out the proteid bodies are now well known and described in most text-books. The albumoses are extracted from the fluids, after removal of the albumin and globulin, by saturation with ammonium sulphate. The amounts are probably a little under the reality, as during the dialysis necessary to separate them from salts a small quantity is lost. The total quantity of proteid is simply the sum of the different forms.

At Dr Ballantyne's request I make this short note, hoping that the point, though minute, may prove of interest. The analyses were carried on at the Laboratory of the Royal College of Physicians, Edinburgh.

Part Second.

REVIEWS.

Lehrbuch der Nervenkrankheiten, für Aerzte und Studirende. Von Prof. Dr H. OPPENHEIM, im Berlin. Berlin: S. Karger: 1894.

THE aim of this book is chiefly to aid those who are clinicians, and so more stress is laid on symptoms, diagnosis, prognosis, and therapeutics than on morbid anatomy and pathology, except in so far as these constitute necessary preliminaries to rational diagnosis and treatment.

In carrying out this object the author has in most instances been entirely successful, though perhaps he has sometimes erred on the side of brevity. His account of the therapeutics of the various diseases is generally full, accurate, and judicious; and will doubtless, to use his own figure, enable many of his readers "to tread with firm and steady footstep this treacherous ground" where it is so difficult to avoid scepticism on the one hand and credulity on the other.

The plan of the work is good. The author has collected into an introductory section of some eighty-eight pages a full account of methods of examining patients who are suffering from nervous disease, along with some of the commoner and more important points of general symptomatology. By this means much space is saved and clearness gained when he comes to treat of special diseases. The thoroughness with which the various means of investigation are discussed is a most satisfactory indication of the clinical character of the book. The principal methods are very fully described, but not to the exclusion of the less ordinary ones that from time to time must be adopted; nor are the more uncommon symptoms left altogether unnoticed. An English reader might be surprised to find that, whilst the investigation of the field of vision occupies almost four pages of this section, ophthalmoscopy only receives some eight lines; but this is to be accounted for by the number of special text-books on the subject which abound in Germany, and the general training in it which students there receive, so that Prof. Oppenheim can afford to dismiss the whole matter with the words, "the individual who cannot use his ophthalmoscope is hardly in a position to diagnose a disease of the nervous system."

The objective examination is arranged in the following order:—A brief preliminary investigation having been made of the patient's mental condition, his motor functions are next tested, and in association with these his reflexes and electrical reactions. In the portion devoted to the tendon reflexes a fuller account of the views that have been advanced regarding the exact mechanism called into action would have added alike to the intrinsic value of the chapter and to the intelligent interest of the student when he practises these tests. But for the most part the arrangement is excellent, and whilst many of these sections contain comparatively little that has not been already described, we yet from time to time meet with suggestions as to the avoidance of fallacies, that indicate the wide experience and acumen of the author. Following this, sensory phenomena are discussed at some length, whilst vasomotor and trophic disturbances receive a short notice. The concluding paragraphs discuss disorders of the special senses and of the cranial nerves, and this part of the book is clearly expressed, though in some subjects, such as paralysis of the ocular muscles, a few diagrams might have been advantageously added.

The ground having thus been cleared of preliminary considerations, the main body of the work is devoted to the study of the various special diseases of the nervous system. These are taken up in groups according as they have their seat in the cord, the nerves, or the brain. Thereafter a special section of over 150 pages is assigned to neuroses and localized muscular cramps, and the last fifty pages of the treatise deal with diseases of the sympathetic, angioneuroses, trophoneuroses, intoxications, and a miscellaneous collection of sundry diseases whose pathology is too little known to enable them to be placed in their proper classes. In this group tetanus, Thomsen's disease, polymyositis, myxœdema, and acromegaly are found as neighbours.

The divisions on the Cord, Nerves, and Brain each open with a short section on the anatomy, physiology, and pathology of these organs. These are brief but accurate, though in some cases views which have much evidence in their favour are disregarded, and statements are made without qualification which are at least open to debate. As an instance of this we may, in the section on the Cord, observe that no reference seems to be made to the experiments of Prof. Ferrier and others on the sensory conducting paths.[1]

Amongst the "system-diseases" the first place is assigned to locomotor ataxy. Besides a full account of the more ordinary symptoms, Prof. Oppenheim describes a case in which at one stage glycosuria developed but subsequently disappeared. The various so-called "crises" are also detailed, and a rare type is referred to, which the author has described under the title of "pharyngeal crises," and of which he says: "These are attacks in which violent swallowing acts rapidly recur, accompanied by a gurgling noise. The duration varies from several minutes to half an hour, and the swallowing act may be repeated twenty-four times per minute. The paroxysms can usually be arrested by deep pressure at the side of the upper part of the larynx." This seems to be a well-defined type, though we cannot help thinking that Gowers is right in opposing his influence to the multiplication of names for minor varieties of these visceral symptoms.[2] An instructive paragraph is devoted to some of the trophic disturbances that develop in certain cases of tabes, and special emphasis is laid on the group of "Arthropathies." The pathology of the disease is then discussed shortly, but by the aid of good illustrations the various leading points are clearly elucidated. One interesting case is mentioned, where the Gasserian ganglion was found to exhibit degeneration, both of its cells and fibres. The chapter concludes with a full, perhaps too full, list of remedies; though it is freely acknowledged that the most that can be hoped for is some improvement, or at least alleviation of the more painful symptoms. The most important question raised is whether anti-syphilitic treatment ought to be adopted, and in answer Prof. Oppenheim states that his own experience is decidedly against it, as he has had few cures and many bad results; still he feels unwarranted in wholly setting aside Erb's strong commendation of mercury, especially as that authority denies that he has ever found it do harm. He would, however, restrict this line of treatment to those cases where there is strong evidence of the presence of syphilis, or where the condition may really be one, not of tabes, but of a genuine syphilitic lesion of the cord.

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[1] *Croonian Lectures on Cerebral Localization* (1890), p. 99.

[2] *Diseases of the Nervous System*, vol. i. p. 413.

The method sketched above in the case of tabes is followed with more or less fulness, according to the importance of the condition, in all the diseases that are discussed. The order which is adopted in classifying the diseases of the cord differs in some respects from that which is usually followed in Britain, but the sequence is well maintained. Firstly, "tract" and "system" diseases are dealt with, then diffuse diseases of the cord according as they are secondary to vertebral and meningeal disease or are primarily situated in the nervous structures themselves, and finally a few of the more obscure diseases are relegated to a short concluding paragraph. Particularly excellent, both in matter and illustration, are the chapters on Poliomyelitis and the Myopathic Diseases of the Cord. The various meningitic affections are also well deserving of attention, and the description of chronic syphilitic meningitis is specially well written. A brief reference is made to the disease known as Diver's Paralysis, in which Prof. Oppenheim adopts, apparently without scruple, the "soda-water-bottle" theory of its production, holding that gas bubbles are disengaged from the blood in the capillaries of the cord in consequence of the sudden reduction of pressure which occurs when the diver returns to the surface, and that these cause minute solutions of continuity in the substance of the cord. The physical difficulties of such a theory are, however, considerable.

The only other chapter in this section which we will refer to at present is that on Gliosis spinalis and Syringomyelia. It is interesting to observe how much more space is given to these subjects in the present volume than in good text-books which are not many years old, and it is satisfactory to note that diseases which, not so long ago, were regarded as mere post-mortem curiosities, have now been so fully worked out as to have an assured place in all practical treatises. The chief symptoms are, of course, progressive muscular atrophy of the upper extremities, partial disorders of sensibility, and vasomotor and trophic disturbances, but in addition to these, quite a series of minor symptoms are now able to be described as frequent accompaniments of this condition. Amongst these Prof. Oppenheim mentions Dupuytren's contraction, spontaneous fractures of the bones, arthropathies similar to those of tabes, scoliotic conditions of the spine, and unilateral hyperidrosis, whilst more rarely bulbar symptoms have been found to supervene.

Though the course of this disease is chronic, the ultimate prognosis is gloomy, and the author cannot hold out much hope of any therapeutic measures leading to permanent benefit.

In the division which treats of Diseases of the Peripheral Nerves the author has not much new information to communicate, but what has been already known is stated clearly and practically. The chapter on Multiple Neuritis is one of the best in the section, and from it we learn that in Germany, as here, alcohol is the most potent factor in its production. Beer-drinking seems to share with spirit-drinking the responsibility for its prevalence, and indeed in Britain also it is not improbable that beer and ale play a greater part in its ætiology than some writers would have us believe. We are glad to find that Landry's Paralysis is treated in a separate section, and entirely agree with Prof. Oppenheim in considering that it is a serious error to regard it as an identical condition with peripheral neuritis, and to describe it as a "Polyneuritis acutissima."

Many of the chapters on Diseases of the Brain are most excellently arranged, and even where the subjects treated of are destitute of novelty, yet the clearness of the description and the careful discrimination of typical symptoms in each instance must be of the greatest service to anyone who is called on to form a diagnosis in obscure cases.

A most interesting though short account is given of "Poliencephalitis superior acuta," which is stated to be frequently the result of influenza, and where an acute and often fatal hæmorrhagic inflammation of the grey matter about the third ventricle and aqueduct leads to delirium, paralysis of some of the ocular muscles, or even an almost complete ophthalmoplegia, and often to a condition closely resembling cerebellar ataxy.

Cerebral Syphilis receives a more ample discussion than is found in most British books of similar size. The prognosis, though often fairly good, is not considered as very hopeful, and special stress is laid on the dangers that result from implication of the basilar artery or the structures in the pons or medulla. In all cases of cerebral syphilis the author advocates active treatment and the employment of mercurials, especially in the form of inunctions.

General Paralysis of the Insane is also very satisfactorily handled, and Prof. Oppenheim is undoubtedly right in including in his treatise a disease with whose symptoms, as he says, it is of the utmost consequence that every physician should be well acquainted, so as by a timely diagnosis to avert many domestic catastrophies.

More space is devoted to the neuroses than we usually find in general text-books, and what is given is good. Forty pages are assigned to Hysteria, and the different types of this protean malady are well described. As to its pathology, the author inclines to think that the disease is due to some molecular changes in the nervous system, and particularly in the cerebral cortex, although this view must undoubtedly rest rather on probability than on demonstration. A section on the differential diagnosis of some of the less typical forms of hysteria from various organic diseases which they resemble adds greatly to the value of this chapter.

Neurasthenia is also treated at considerable length, and the essential differences between it and hysteria are well demonstrated. The prognosis is regarded as by no means very encouraging, especially in cases of long standing, though exceptions do occur which may make one hope for better results in the future.

In an appendix to these two chapters we are introduced to a small selection from those numerous conditions that are related to the above diseases, but which have distinctive characters of their own, and which have been dignified by names whose length is in proportion to their rarity. Some of them are undoubtedly distinct conditions that merit recognition, others seem to lie on the borderland, whilst not a few are mere groups of symptoms which would be much more usefully described in plain English or German than adorned by more or less accurately constructed Greek titles, whose employment, however gratifying to their inventors and to specialists, must seriously inconvenience ordinary medical readers. As they are in use Prof. Oppenheim is doubtless right to refer to them; he has done well to make a limited selection and to place them in an appendix. As examples of the matters treated in the said appendix we may mention akinesia algera, apraxia algera, astasia-abasia, and the various conditions of anxiety or terror described as agoraphobia and its congeners claustrophobia, potamophobia, and anthropophobia.

Epilepsy receives twenty pages for its discussion, and on the whole it is well handled, though some other sections in the book are better done. In the very brief remarks on its pathology we miss all reference to Dr Bevan Lewis' admirable investigations which led him to discover a degenerative change in the cells of the second layer of the cortex, a full account of which is given in his *Text-book of Mental Diseases*.[1]

Puerperal Eclampsia is dismissed in less than a page, which, considering its importance, is hardly satisfactory.

Amongst the remaining diseases, almost all of which are well described and merit careful study, the best chapters are devoted to Tetany, Chorea, Paralysis Agitans, Raynaud's Disease, Graves' Disease, and Myxœdema, and, did space permit, interesting paragraphs might be quoted from each of them.

In new books on neurology perhaps the most crucial test of their efficiency is the attitude they assume towards the recent advances in the surgery of the central nervous system. Although Prof. Oppenheim does not enter into the technique of the various operations, he shows a full acquaintance with them, and with the indications for their adoption. A long chapter is occupied with a discussion of the injuries and diseases of the vertebræ that implicate the spinal cord. The author approves of careful manipulations when dislocation alone is present, but he is very decided in condemning any attempts at reposition where fractures have occurred. In the latter case, whilst acknowledging that the results of operation are not, and, indeed, cannot be expected to be brilliant, he yet thinks that if we suspect compression of the cord by bone fragments or blood extravasation, an operation may be decidedly desirable.

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[1] *Text-book of Mental Diseases* (Griffin & Co., 1889), p. 522.

Where caries of the vertebræ exists he advises rest in bed, with extension in cases which do not quickly respond to rest alone. He does not approve very much of the partial rest afforded by Sayre's jackets, and indicates that in Germany at least the tendency is becoming gradually stronger to prevent such patients going about at all. As to the wisdom of surgical interference he is not fully convinced; and he particularly objects to a premature operation, since so many cases end naturally in a cure. With regard to counter-irritation his views are not so decided as those of some recent writers. To illustrate this, we append two quotations, the first from our author, the second from Prof. Senn's book on *Tuberculosis of Bones and Joints*, published in 1892.

Prof. Oppenheim says,—"Opinions differ as to the value of derivative methods of treatment. Modern practice opposes the use of the cautery, issue, and seton; still, in cases which are not improving with rest and mechanical support, and which are at the same time unsuited for surgical interference, these proceedings may be adopted, and a free discharge promoted from the back at the level of the diseased vertebra."

Prof. Senn says,[1]—"It is fortunate that counter-irritation in the treatment of tuberculosis of the spine as well as of other bones has been abandoned long ago, and it is safe to predict that it will never come into use again. It is difficult to conceive how much suffering and misery was inflicted by this method of treatment upon a class of patients least calculated to bear such treatment."

In cases of tumour causing spinal symptoms the indications for operative interference are, according to our author, very variable, being most unfavourable in cases where the vertebræ are first involved, but decidedly better when it arises from the meninges. In the latter case he gives a hint that is of considerable importance, namely, that the tumour in some cases lies opposite a higher segment of the cord than the localizing symptoms would seem to indicate, and he adds that he knows of two cases in which the neglect of this important fact led to failure at the time of operation.

In Cerebral Surgery the book is well up to date. Cerebral tumours receive a full discussion, and the experience of many of the principal operators, both German and British, as regards the selection of suitable cases, is supplied in condensed form. Parasites, both cysticercus cellulosæ and echinococcus, are stated to be frequently present in the brain in Germany. Their presence is characterized by headache, convulsions, psychic disorders, and often by localizing symptoms dependent on the position of the intruder, but choked disc is almost always absent. In this disease operation is rarely successful, since in the vast majority of cases there are numerous cysts scattered throughout the brain substance. The therapeutics of cerebral abscess and thrombosis of the sinuses are treated in this book for the most part from a surgical aspect, and statistics are produced which impress on the reader the importance of a timely resort to operative measures. Cases of abscess associated with aphasia receive special attention, and one case is described where "optic aphasia" was found to be associated with suppuration about the parietal and occipital lobes.

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[1] *Loc. cit.*, p. 371.

An interesting case, which came under Prof. Oppenheim's care, is described in the section devoted to the cerebral varieties of infantile paralysis. The following is a *résumé* of it:—A girl, aged 12, had suffered since she was four years old from right-sided hemiplegia, hemiathetosis, and convulsions. A spot, tender to percussion, lay in the left parietal region. This area being trephined, a cyst as large as a plum was found in the meninges and removed, but the brain was not interfered with. At first the patient seemed distinctly better, but subsequently relapsed, and eventually died in the status epilepticus. The autopsy disclosed the presence of an old and extensive focus of softening, which penetrated deeply in the region of the central convolutions and the inferior parietal lobe, and seemed to have been of meningo-encephalitic origin. It was associated with an atrophic state of the whole left hemisphere.

The book is well printed, and for the most part well illustrated. Many of the woodcuts are, as the author states, borrowed, and this for a text-book is very desirable, since these generally represent the survival of the fittest; but in addition there are numerous reproductions of the author's own microscopic and pathological specimens and photo-engravings of the cases that have come under his care. Of the latter, some are excellent; others, however, are indistinct, and show a lack of appreciation of the importance of suitable background, pose, and lighting in bringing into prominence the conditions which they are meant to illustrate. In fact, in many instances the present photographic reproductions are very inferior to the woodcuts of older books, and unless more care is taken, both with the production of the original negatives and the choice of more delicate modes of mechanical printing from them, the sooner they disappear from our literature the better for all concerned.

It is easy, however, to criticise even the best books on medicine, and we would rather conclude by emphasizing the many merits with which Prof. Oppenheim's work abounds. The general result of his efforts has been to depict with great clearness the various conditions under which nervous patients labour; and though the rigidity of his classification is at times not free from inconvenience, as is exemplified in the instance of oculomotor disturbances, where some 300 pages separate the cases of peripheral from those of central origin, yet other methods present quite as great or even greater disadvantages, and by cross references the student can easily overcome these drawbacks, such as they are, and ascertain all that he requires to know.

The book is one which may be warmly commended to the attention of all who take an interest in this most important branch of medicine.

An American Text-Book of Gynecology, Medical and Surgical. By HENRY T. BYFORD, M.D., J. M. BALDY, M.D., EDWIN B. CRAGIN, M.D., J. H. ETHERIDGE, M.D., WILLIAM GOODELL, M.D., HOWARD A. KELLY, M.D., FLORIAN KRUG, M.D., E. E. MONTGOMERY, M.D., WILLIAM R. PRYOR, M.D., GEORGE M. TUTTLE, M.D. Edited by J. M. BALDY, M.D. Philadelphia: W. B. Saunders: 1894.

MANY years have not elapsed since the large *System of Gynecology by American Authors*, edited by Prof. M. D. Mann, was published, and now we have to notice another compendious work of almost exactly the same nature. In the former work, however, the articles were signed, in this they are not; but, as the preface puts it, "The work embodies, as nearly as possible, the combined opinions of all the authors, although it is to be understood that each individual author must be free from absolute responsibility for any particular statement: especially is this so, for the reason that the editor has endeavoured, by adding to and subtracting from the text, to render it as uniform in its statements as possible."

The first chapter treats of the examination of the female pelvic organs, and whilst the information given is thoroughly good and well up to date, we must protest against the realistic photographs of nude women used to illustrate the various gynecological positions. Further, we think it is time that valvular specula were relegated to the shelves of museums, and readers on this side of the Atlantic at least will not be much interested in the various forms of examination chairs and tables ("Allison," "Indianopolis," and the like) which are represented. The second chapter, on the Technique of Gynecological Operations, is well and clearly written, and is likely to prove of great service to the young gynecologist. Then follow two articles on Menstrual Disorders and Sterility; and we are glad to see that the authors do not think much of artificial impregnation, although they mention it, and even give a representation of the apparatus used. There is a short chapter on Genital Abnormalities, and a good one on a subject much in evidence at present, Genital Tuberculosis. The rest of the work follows in the beaten track of gynecological treatises, and deals with diseases of the vulva and vagina, inflammatory diseases of the uterus, laceration of the soft parts, genital fistulæ, distortions and malpositions, malignant disease, uterine neoplasms, pelvic inflammations, ectopic gestation, diseases of the ovaries, tubes, urethra, bladder, and ureters; and closes with a chapter on after-treatment in gynecological operations, in which many of the most modern methods are recommended. The manual method of replacement of the retroflexed uterus is strongly advocated, whilst the electrical treatment of fibroids is certainly not highly spoken of.

The work is beautifully printed, is furnished with a good index, and is, with the exception of the plates to which we have alluded, illustrated in a most satisfactory manner. It is a thoroughly modern text-book, and gives on nearly every matter reliable and well-tempered advice and instruction. The authors (many of whom belong to the younger generation of American gynecologists) and the editor are to be congratulated on the way in which they have performed their task.

Difficult Labour; a Guide to its Management, for Students and Practitioners. By G. ERNEST HERMAN, M.B. Lond., F.R.C.P., Senior Obstetric Physician to the London Hospital, etc. London, Paris, and Melbourne: Cassell & Company, Limited: 1894.

DR HERMAN has had great experience in the treatment of difficult labours, and his present work embodies the treatment which this experience has led him to advise and adopt. Beginning with difficult occipito-posterior positions, he deals in turn with face and brow cases, pelvic and transverse presentations, prolapse of extremities, anomalies of cord, twins, malformed infants, abnormal uterine action, contracted pelvis, tumours impeding delivery, rupture of the uterus, and hæmorrhages. The remaining chapters are devoted to the description of the forceps, turning, operations for lessening the child's size, Cæsarean section, symphysiotomy, and the induction of premature labour. We are somewhat surprised to find that Dr Herman gives only a qualified approval of the axis-traction forceps, and recommends his readers to use an instrument closely resembling the old Simpson long forceps. We should also have been pleased to find less about the methods of killing the child *in utero* in difficult cases, and some more definite advice about the propriety of performing craniotomy at all. A guarded opinion is given as regards symphysiotomy. On the whole, the book is likely to prove useful to a very large class of readers who are already familiar with the good work which the author has done in obstetrics. The work is profusely illustrated, and is provided with a good index.

Uric Acid as a Factor in the Causation of Disease. By ALEXANDER HAIG, M.A., M.D. Oxon., F.R.C.P. Second Edition. London: J. & A. Churchill: 1894.

THIS is the book of a man of one idea, and one is tempted to wonder how it ever got into a second edition.

It consists almost entirely of statements unsupported by evidence of any worth. The presence of uric acid in the blood in a *plus* or *minus* quantity accounts, according to Dr Haig, for almost all the ills that flesh is heir to, from a cold in the head to epilepsy and paroxysmal hæmoglobinuria.

In such a work the chemical method used is of the greatest importance, but Dr Haig does not condescend to such minutiæ.

After reading the book one is afraid to eat a beefsteak to dinner without a ten-mile walk afterwards, as one may be storing up uric acid to bother one in old age.

Micro-Organisms in Water: their Significance, Identification, and Removal. By PERCY FRANKLAND, Ph.D., B.Sc. (Lond.), F.R.S., and Mrs PERCY FRANKLAND. London: Longmans, Green, & Co.: 1894.

PROF. PERCY FRANKLAND is so well known as an expert in all bacteriological questions connected with the sanitary aspects of water-supply, that a book from his pen, entitled *Micro-Organisms in Water*, cannot fail to attract the notice of those who regard the purity of potable water as of vital importance, as well as of those who make bacteriology their special study.

The book contains nine chapters, and the first three are devoted chiefly to the technology of the bacteriological examination of water. These chapters will prove very useful to those who wish to study practically the bacteria in water. Although necessarily covering old ground, they contain much information not generally found in text-books of bacteriology. The description of special culture media and of solutions for cultivating nitrifying organisms, and an elaborate account of the methods pursued by Miquel in his classical investigations, will be welcomed by all students of bacteriology.

In the remaining chapters the reader is brought into close contact with the work of Prof. Frankland during the last ten years. Hitherto Percy Frankland's copious writings have appeared as papers in the various scientific journals, and the gathering of these together in a book dealing with the whole subject of the bacteriology of water will be welcomed as simplifying the task of reference, and making it easy to learn what he has done and what conclusions he has reached in connexion with the study of this interesting subject. It may occur to the casual reader that the personal character of the book is perhaps too apparent; but to those familiar with the quality and the quantity of Prof. Percy Frankland's work on the bacteriology of water, the value of the treatise is enhanced by the copious references to the author's separate papers detailing his experiments.

The chapter on the bacterial contents of various waters deals chiefly with the number of germs found in snow, ice, and hail; in rain; in spring and well waters; in rivers, mineral springs, and lakes; and in sea-water. In this chapter an interesting case is given of a water which, when examined bacteriologically, showed evidence of pollution where pollution was known to exist, and yet which, when examined chemically, showed so slight an alteration in its composition as to give no evidence of contamination. Remembering Prof. Percy Frankland's position as a chemical as well as a bacteriological expert, it would have been an advantage if he had entered fully into the question of the dependence and interdependence of chemistry and bacteriology in relation to the analysis and examination of waters.

Chapter V. is devoted to the consideration of the purification of water for drinking purposes, and contains an excellent summary of the valuable and extended researches of the author in connexion with the London water supplies. Its perusal will be very instructive to medical officers of health and students of hygiene.

The chapters dealing with the multiplication of micro-organisms, the detection of pathogenic bacteria in water, and the vitality of particular pathogenic bacteria in different waters, are highly interesting, and show the enormous strides made in bacteriology during recent years.

The concluding chapter, on the action of light on micro-organisms in water and in culture media, contains a very interesting account of the latest experiments in this new and instructive path of bacteriological research.

The biological and morphological characters of 200 different micro-organisms found in water are well described in an appendix. The index is carefully compiled, and the illustrations and text leave nothing to be desired. There are two plates, the first of which is less satisfactory than the second; but the drawings of the bacillus arborescens in plate ii. are excellent.

The joint authorship of the book gives it an additional interest. Mrs Percy Frankland's contributions to scientific literature are well known, and need no special commendation here.

In the Appendix the bacillus janthinus is described as occurring in water, but not frequently. This micro-organism is common in Edinburgh drinking water. The bacillus arborescens, mycoides, and violaceus are said to be found in particular waters; but it is open to question whether these bacteria are not present in nearly all waters, although they are rarely detected. They are certainly present in Edinburgh water.

Pathogenic germs are so rarely found in water undoubtedly polluted with disease germs, that their recognition is regarded as something very remarkable. The enumeration of the total number of germs in a water gives no criterion of its purity, unless the characters of the colonies in the cultivations are likewise considered. When a new edition of this work appears, it is hoped that the authors will tell us what precisely are the characters and what are the names of the bacteria which serve to indicate pollution of a water and danger to the consumer. Given the characters, the names, and the descriptions of these bacteria, in what proportion may their presence be tolerated as not involving danger? If we are to condemn a water bacteriologically (and it is by no means certain that we can do so, for are not many of the so-called putrefactive bacteria likewise common inhabitants of our potable waters?), we can only do so with definite data to start with, and no one could furnish these better than Prof. Frankland. We condemn a water chemically because it contains either foreign substances or substances normally present, but present in too high a proportion. Is it impracticable to condemn a water on the same lines bacteriologically?

The book is not a mere compilation, but is to a very large extent the record of original and good work, and it will prove of great value to all students of bacteriology.

Introduction to the Catalogue of the Collection of Calculi of the Bladder. By Sir HENRY THOMPSON, F.R.C.S., &c. London: J. & A. Churchill: 1893.

THIS little volume was prepared in connexion with the very valuable collection of vesical calculi which the author in 1892 presented to the Royal College of Surgeons, and which is now in the Hunterian Museum.

Apart from its utility in this connexion, it is of permanent interest as an expression of an enormous and carefully digested experience in this department. Much of the matter is already to be found in an analysis of cases presented in 1890 to the Royal Medico-Chirurgical Society, but the whole has been thoroughly revised and new cases have been added. The conclusions arrived at from a consideration of upwards of a thousand cases cannot fail to prove most suggestive and instructive.

Darwinianism: Workmen and Work. By JAMES HUTCHISON STIRLING, F.R.C.S. and LL.D. Edin. Edinburgh: T. & T. Clark: 1894.

IN the first part of this interesting work the author gives an extremely well-written, vivid, and entertaining biography of Erasmus Darwin, the grandfather, who is shown to be the real author of "the survival of the fittest," of Dr R. W. Darwin, and of Charles Darwin himself. In the second part, drawing largely upon "Life and Letters" by Francis Darwin, Dr Hutchison Stirling makes a determined, and many will consider successful, attack on "natural selection" and "the survival of the fittest," the essential doctrines of the *Origin.*

The author, who is generally fair but severe, tells us that the

Origin is a mere collection of facts, loosely compiled, derived from all kinds of sources of which Charles Darwin owned; "the difficulty is to know what to trust" (p. 179). The author denies that Darwin ever made a single discovery in support of natural selection. To account for the success of the *Origin*, he quotes Charles Darwin (p. 181), "I owe much to my friends," and yet hardly one, except perhaps Huxley, was anything but hostile to the essential doctrines of the *Origin*. It was on evolution, and not on natural selection, that such men as Hooker, Lyell and Gray, Wallace, etc., supported him. Much of the success of the *Origin*, he says, is due no doubt to the writings and speeches of Huxley (p. 173), "his good and kind agent for the propagation of the Gospel." Lyell, too, as President of the British Association at Aberdeen in 1859, puffed the book before publication in the most extravagant way (p. 170), but afterwards became one of the most implacable opponents to Darwin's essential doctrine. Wallace was really "far apart" from Darwin (p. 183). Agassiz described it as "poor, very poor." Huxley, too, seemed to have no better reason for supporting him than that "the Darwinian hypothesis remains incomparably more probable than the creation hypothesis" (p. 186). Hutchison Stirling quotes Darwin thus (p. 193): "I have found to my cost a constant tendency to fill up wide gaps of knowledge by inaccurate and superficial hypotheses."

Of Darwin's character the author notes the following traits:—Ambition to distinguish himself and secure the approbation of men of science (admitted by himself); certain shyness, observable as a boy and lasting through life; extravagance of language, especially in praise of others. He brings forth many objections to Darwin's theories, which he variously describes as fatal, crushing, damnable, odious, etc., and says he prefers wriggling out to facing or modifying his views. For this Sir Wyville Thompson is produced in evidence (Introduction to the *Voyage of the "Challenger"*): "The character of the abyssal fauna refuses to give the least support to the theory which refers the evolution of the species to extreme variation, guided only by natural selection." Surely the following lines form too severe a criticism:—"So far, one can only see the entrance here of the first fallacy, on the part of the public, in reference to Mr Darwin. It was really believed that one of the greatest of the known and established experts had *discovered* something. He had discovered nothing. For years he only kept a commonplace book—a commonplace book for whatever notice, miscellaneously read or heard, might seem to favour his own fondly formed presuppositions, as of bears growing into whales by catching insects in the water! Such notices, as bearing only on his own goal, were illustrations, rather than facts. The relative facts—facts that were really of power and of place as facts, namely—were all known before—they were 'general facts of the affinities, embryology, rudimentary organs, geological history, and geographical distribution'—and they were no discovery of his. What contribution could be called his was a theory, an hypothesis, in mere suggestion of the correlation of the facts. Natural selection was a simple supposition of how said 'affinities' might come about. And what were facts to him, were they really so valuable? Hearne the Hunter? It is impossible to exaggerate the weight which Mr Darwin, as to Lyell, lays on such a fact as that. If Lyell would but look at it, he would see that the conversion of a bear into a whale 'would be easy,' 'would offer no difficulty.'"

Dr Hutchison Stirling concludes his volume as follows:—"For myself, in conclusion, I must say this: I admire the naturalist and I honour the man; but I hope to be forgiven if, 'for the life of me,' I cannot but smile when assured by Mr Darwin that there is not necessarily such a thing as design in this universe,—'*Now that the law of natural selection has been discovered.*'"

The reading of this book has been a rare treat, but we have had one regret, and that is that it was not written in Mr Darwin's lifetime, for his reply would have been a still greater treat.

The Human Element in Sex: being a Medical Inquiry into the Relation of Sexual Physiology to Christian Morality. By Dr ELIZABETH BLACKWELL. New Edition. London: J. & A. Churchill: 1894.

ALTHOUGH there may be considerable difference of opinion as to the physiology of this book, yet the object for which it is written is admirable, and it is a useful book to put into the hands of parents. There can be no doubt that children should receive instruction from their parents on sexual matters, and we fully sympathize with Dr Blackwell's endeavour to place the matter plainly before parents and guardians of the young.

The Medical Annual and Practitioner's Index: a Work of Reference for Medical Practitioners. 12th Year. Bristol: John Wright & Co.: 1894.

THIS handy publication improves each year, and the editor is to be congratulated upon his success. We have gone through the volume carefully, and find it admirable in all respects. The articles on the ear, the eye, and insanity are especially valuable this year, and the illustrations of insane patients are highly commendable. We can strongly recommend this publication.

The Medical Magazine, June and July 1894. London: Southwood, Smith, & Co.

THIS excellent magazine continues to maintain a high standard of achievement. Its original articles are interesting and well written, touching on the relations of the medical art to social and educational problems, to history, and to literature. Cases and comments on them are conspicuous by their absence, and as a consequence the reading matter, if less practical, is more entertaining. A series of papers on the Medical Student as a Character in Fiction, by Mr Harold Bailey, promises to be very interesting, though, as yet, he introduces us to very old and well-known friends. If a similar series of papers is to be written on recent appearances of the *Doctor* in fiction, the very remarkable and touching stories appearing in the *British Weekly* above the signature of "Ian M'Laren" cannot be overlooked.

The articles on the Army and Navy Departments and on Asylum Management are excellent, especially a most interesting account of James Murray's Royal Asylum, near Perth, which, under the care of its able and enthusiastic superintendent, Dr Urquhart, has prospered so marvellously.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIII.—MEETING VIII.

Wednesday, May 2, 1894.—Dr CLOUSTON, *President, in the Chair.*

I. ELECTION OF MEMBERS.

THE following gentlemen were elected Ordinary Members of the Society:—Robert Muir, M.D., 20 Hartington Place, Edinburgh; John Cumming, L.R.C.P. & S. Ed., 94 Gilmore Place, Edinburgh.

II. EXHIBITION OF PATIENTS.

1. *Mr Caird* showed two patients after recovery from TRACHEOTOMY FOR DIPHTHERIA.

2. *Dr Graham* showed a case of FRACTURE OF THE SUPERIOR MAXILLA.

III. EXHIBITION OF SPECIMENS.

1. *Mr Caird* showed specimens illustrating TRACHEOTOMY AND DIPHTHERIA.

2. *Dr Graham* showed a JOINT which had been excised by Sir Joseph Lister in 1884.

IV. ORIGINAL COMMUNICATIONS.

1. *Dr Norman Walker* read a paper on THE COMMONER VARIE-

TIES OF LUPUS VULGARIS AND THEIR TREATMENT, which appears at page 116 of this Journal.

Mr A. G. Miller said he would like to say a few words upon three methods of treating lupus. They were,—(1), Bier's congestion method; (2), scraping; and (3), excision. It was important to bear in mind that in lupus, as in all tubercular affections, the results of treatment depended very much upon the peculiarity of the patient's constitution, or whatever else they chose to call it. There were some tubercular patients who would not kill. They seemed to have a tendency to work through all sorts of tubercular conditions, and to get well. Others, let them do the best they could for them, went down the hill. He had now tried Bier's congestion method in several cases, and had reason to be very well satisfied with it so far. In the case of the girl with tubercular affection of both feet whom he had already shown to the Society, he had treated one foot by Bier's method, and the other by blistering and scraping. The main difference between the two limbs ultimately was that the spreading foci, which were very numerous, had disappeared in the Bier's foot, and had not returned. The congestion seemed specially to prevent the tendency to spread. Bier's method, with the addition of scraping, he thought, was an excellent way of treating lupus. With regard to treatment by scraping, it was of no use unless it was done thoroughly. There were three different areas in lupus,—the cicatricial, which had got well, and did not need to be meddled with; the granulation, which might be scraped if they liked; and the area of apple-jelly nodules. For the last, which was the spreading area, scraping, with a Volkmann's spoon at least, was of no value whatever. If they were to destroy lupus by scraping, they must employ the very smallest sharp spoon they could get. He much preferred the older spoon of Squire. It just fitted a lupus nodule. It was, in addition, a splendid diagnostic aid. It would only go in if there was a nodule. He had had a case from which he scraped away a considerable amount of granulation tissue. No tubercle bacilli were found in it. But in one of the nodules removed by means of a Squire's spoon myriads were found. He adopted Sir Joseph Lister's plan of applying pure carbolic acid after scraping away everything. It probably helped to destroy the bacilli, but in addition it produced a white pellicle, which he removed, and so made an extra scraping. Regarding excision, he entirely agreed with what Dr Walker had said. It must be very free if it was to be successful.

Mr Miller then showed a LAD who had suffered for many years from lupus, which extended over nearly the whole of the face and neck, and into the mouth and nostrils. It had been scraped forty-eight times with the patient under chloroform. Only two or three of these scrapings, however, had been extensive. Great improvement had been effected, and the patient was now nearly well.

Dr W. Allan Jamieson said that the observation which Dr

Walker had made with regard to the presence of epithelium over the granulations was an exceedingly interesting one. They had generally been led to believe that there was an entire loss of epithelium, and that the ulcer had eaten a way into the corium itself, the nodules commencing in the corium, and from the presence of pathogenic organisms leading to secondary changes producing ulceration. Regarding the fibroid form, there was no doubt that they met with lupus on the limbs of a more dense and persistent form than on the face. This, however, might be due to the fact that in the limbs there was a thicker layer of epidermis and a less superficial vascularity. Fibroid lupus was therefore probably simply a variation from the ordinary type without being actually another variety of the disease. There was a variety of lupus known as *lupus verrucosus*, of which the ordinary post-mortem wart was an example. This form at first sight seemed to be quite different from ordinary lupus; but when, by means of salicylic plasters or scraping, the papillary hypertrophy was removed, they came down upon a tissue in which there was a fibrous state of the skin and apple-jelly nodules,—in fact, it was reduced to a lupus vulgaris *plus* more connective tissue. This form was rare on the face. When it was found there, it occurred on the upper lip or chin, where the skin approximated more to that of the extremities than on the cheek or nose. Therefore he thought that while Dr Walker was inclined to cast aside the too numerous and superfluous nomenclature of lupus, he had erred a little in the same way by adding another form which simply depended upon a difference of situation, or upon an excess of what was normal in all conditions of lupus,—the presence of *lupus fibroma*, as Unna had called it. Excision was hardly applicable for the face, as it seldom left a linear cicatrix. If skin-grafting was employed in order to avoid this, there was the risk in the face of the occurrence of erysipelas, or of sloughing of the patch of skin. Whatever they did in the treatment of lupus, it must be their endeavour to produce as much scar tissue as they could, and to reduce as much as possible the number of nodules. He had found that some other preparations, such as oleate of mercury, acted quite as well as Brooke's ointment as a means of introducing antiseptics into the skin. There was one remedy which Dr Walker had not mentioned which he thought was of extreme value in lupus, namely, carbolic acid. Pure carbolic acid painted frequently over a patch of lupus lessened, though perhaps slowly, the number of nodules in the patch. It produced a greater density of the tissue, and apparently led to a condition of the soil which was less suitable for the growth of the bacillus than before. Blisters no doubt did good. They acted much in the same way as an attack of erysipelas. Still it must be looked upon as merely a preliminary measure. It probably acted much in the same way as tuberculin, causing hyperæmia around the lupus nodules, and for a time disappearance of the obvious symptoms.

Before using the cautery, he found the employment of the ordinary dental burr of great value. He used it as a drill, and drilled it into each nodule. He used in general a fine thermo-cautery. He did not think that the increased congestion caused by the galvano-cautery was an advantage. What often threw their cases back as much as anything was the influence of cold. When the patients were exposed after treatment in hospital wards to cold atmospheres and winds there was apt to be a relapse. They therefore should endeavour, as far as possible, to keep the patients warm.

Mr Joseph Bell said that it seemed to him that one of the greatest things they could do to help the cure of lupus would be to explain, both to the profession and to the public, that lupus was a disease of extreme gravity, as bad as cancer, and that it should be treated surgically as soon as the first sign was seen. It was no use waiting to see the effects of constitutional treatment. There was not the slightest doubt that the best way to treat lupus of the limbs was to excise it freely. But in the face, they had to provide for the future appearance of the patient. He used a sharp spoon. The smaller and sharper the instrument was, the better Squire's spoon, even, was too blunt. After scraping out the nodules he applied a strong solution of chromic acid. Every person had their own views with regard to the local method of destroying the apple-jelly nodules. Constitutional treatment had not very much effect. The disease should be treated, like cancer, early and heroically.

Mr Alexis Thomson said he wished to give his opinion in favour of treatment by excision. He had made sections of lupus, and seen that the nodules were not on the surface, and therefore not removable by ordinary scraping, and he had seen cases in which scraping had been carried on into the teens of years. The nodules were underneath, and separated from the reach of the spoon by dense fibrous tissue. He would not give in to the view that excision should be limited to parts where only a linear scar was allowable. The disfigurement that was left was less than what resulted when other methods were used. By Thiersch-grafting especially one was able to get a good result. His only difficulty with Thiersch-grafting had been, not that he did not get healing, but that the hairs on the graft when it was taken from the thigh developed to such an extent that they became unsightly.

Mr C. W. Cathcart said he would like to have Dr Walker's opinion upon an interesting point, into which he had not entered. It was a striking fact that tubercle bacilli might be on the surface of the skin for years as lupus, and not affect glands or give other manifestations. Another remarkable fact was that the typical tubercular ulcer had undermined edges. When the tubercle bacillus attacked the surface of the skin it spread along and did not extend deeply. Might not the explanation of these facts be that the corium acted as a barrier to the tubercle bacillus?

Dr Norman Walker, in replying, said he was sorry to differ from Mr Miller on one point. As far as his experience went it was incorrect to say that the central or cicatricial area in lupus could be safely left alone. One of the main points in the diagnosis from a syphilitic scar was that the tubercular one was not healthy. The syphilitic was much whiter. Nodules almost always arose again in the lupus scar. It was true that it was impossible to scrape away the deep nodules. It was also to be remembered that they were often so small that they could not be seen with the naked eye. There might be something in Dr Jamieson's contention that the fibroid form of lupus was due partly to position. But while he had seen only one case at all comparable to it on the face, he had seen a good many of the ulcerative and apple-jelly forms on the limbs. He did not agree with Dr Jamieson that the effect of blistering was comparable to that of an attack of erysipelas. He could not see how the corium could act as a barrier to the tubercle bacillus. Against such a view there was the fact that lupus of the face did not spread any more than lupus of other parts where the corium was thicker.

2. *Dr Alexander Bruce* read a paper on TWO CASES OF NODOSE PERIARTERITIS OF SYPHILITIC ORIGIN.

Surgeon-Major Black remarked upon the prevalence in the army of aneurism due to syphilitic disease of the arteries.

The President said that the lesson of Dr Bruce's paper was that in cases of syphilis the iodide should be continued for years after symptoms had disappeared. It was difficult to get patients to carry out the treatment, but it was exceedingly important that they should.

Mr C. W. Cathcart asked if the symptoms which preceded death were due to thrombosis of the arteries, or to meningitis?

Dr Bruce, in replying, said he had no doubt that the rapid progress of the case was more largely due to thrombosis than to the meningitis. Almost every one of the vessels were thrombosed. There was a distinct amount of softening in the medulla. He had no doubt there was a distinct encephalitis as well as a meningitis. His reason for bringing the cases before the Society was that he believed the condition was a more common one than was usually suspected.

3. *Dr Dawson Turner* read the following NOTE ON THE ACTION OF IODINE:—

The value of iodine as an absorbent and counter-irritant had long been known. It was used to cause absorption of enlarged glands, thickening due to chronic inflammation and severe effusions, and this action was believed to be due to a stimulation of the lymphatic system. Perhaps the most remarkable results due to the action of iodine as an absorbent were those which were attained by Major Holmes and Captain Cunningham in the treatment of goitre in India. They recommended that the enlarged thyroid should be smeared over with the red iodide of mercury ointment, and that then the patient should be made to sit with his neck exposed to the rays of the sun, or of a hot fire, for many hours. The results were extraordinary. Sixty thousand natives were treated gratuitously in two years, and a cure was commonly effected. (*Vide* "Goitre," *Quain's Dictionary of Medicine.*)

Dr Turner's object in this communication was to offer a suggestion from the point of view of the physicist as to the mode of action of the iodine in these cases. We use iodine in physical experiments to cut off the visible rays of the spectrum. A solution of iodine in bisulphide of carbon will quench the visible rays of the sun, but will transmit the invisible heat rays. The solution is, in fact, remarkably transparent to the heat rays,—it is diathermanous. Prof. Tyndall in 1868 was the first to point this out. Now, the fact that Major Holmes found that the action of the red iodide of mercury was much intensified by exposing the patients to the direct rays of the sun appeared to Dr Turner to depend upon the physical action of the iodine that had been mentioned. He offered this as a suggestion. Further, the fact that the *red* iodide is the most efficacious points in the same direction, because the red substance would also serve to transmit the heat rays only. The solar radiation would be filtered by the application, and the gland would be subjected to the full blaze of the calorific rays without the vibration of its molecules being altered by the visible rays. The action of iodine when applied externally for swollen glands or enlarged knees may also depend upon this physical property He concluded with the suggestion that such cases might also be benefited by exposure after the application of the iodine to the radiant heat of a hot fire.

Dr William Craig said he would like to ask whether iodine in a state of combination with other elements had the same effect upon the sun's rays as it had when in a free state, because he had always understood that the action of iodine in a free state was very different in all respects from its action in a state of chemical union.

Dr W. Allan Jamieson said that it had lately been observed that if the face was coated with a brown varnish sunburn was not produced to the same extent. Iodine produced a distinct brown colour on the surface, and he would like to know if iodine used in solution produced the same effect as, for example, red iodide of mercury, which of course had quite a different colour.

Dr Dawson Turner, in replying to the remarks made by Drs Craig and Jamieson, did not know how much the action of the iodine would be masked by the presence of the other ingredients in the ointment, nor had he had an opportunity of measuring the absorption produced by the red iodide ointment. It was not from a study of the effects produced in disease by this ointment only that he had ventured upon making the suggestion, but from the consideration of the general uses of iodine in solution in producing absorption. The brown colouring matter to which Dr Jamieson alluded would probably serve to absorb the visible rays of the spectrum; but without an experiment, it would be difficult to say what rays it would transmit. Prof. Tyndall found that brown paper was at once set on fire by obscure radiation,—*i.e.*, that it was a powerful absorbing medium for the invisible rays, as we also know that it is for the visible rays.

Note added later.—He found that Prof. Tyndall made some experiments with the red iodide of mercury rubbed on paper, and found that while it absorbed the luminous rays it transmitted a large proportion of the invisible heat rays. Hence it fell into line with the simple iodine.

SESSION LXXIII.—MEETING IX.

Wednesday, May 16, 1894.—Dr CLOUSTON, *President, in the Chair.*

Dr J. Halliday Croom opened a Discussion on MASSAGE AS AN ADJUVANT TO MEDICAL, SURGICAL, AND GYNÆCOLOGICAL PRACTICE.

Dr A. J. Keiller then read the following paper:—

The employment of massage as a means of curing or alleviating abnormal conditions of the human body is by no means a thing of yesterday, as from authentic historical records we know that rubbing (certainly not a perfect form of the treatment) was practised systematically by Hippocrates himself about 380 B.C., who then laid down certain principles which to-day hold good, viz.:—

1st, Soft or light rubbing loosens or relaxes tissue.

2nd, Hard or vigorous rubbing binds or contracts tissue.

3rd, Prolonged rubbing causes tissue waste.

4th, Moderate rubbing causes tissue growth.

And although perfectly ignorant of the anatomy of the circulation, he remarked that in the limbs rubbing upwards had a better effect than rubbing downwards.

It is also related by Plutarch, in the time of the Roman Empire, that the Emperor Cæsar Augustus was cured of a general neuralgia by being manipulated daily by a slave.

Since then, all through the ages, it has been consistently practised by the peoples of Eastern countries, more particularly in China, where passive muscular exercises have for centuries been employed not only for the development of the healthy body, but also as a curative agent.

The following extract from Capt. Cook's diary, dated from Society Islands, Sept. 22nd, 1777, is of interest:—

"I now returned on board my ship, attended by Otoo's mother, his three sisters, and eight more women. At first I thought this numerous train of females came into my boat with no other intention than to get a passage to Mataria; but when we arrived at the ship, they told me that they intended to pass the night on board for the express purpose of undertaking the cure of a disorder I had been complaining of, which was a pain of a rheumatic kind. I accepted the friendly offer, had a bed spread for them on the cabin floor, and submitted myself to their treatment. They began to squeeze me with both hands from head to foot, but particularly in the parts where the pain was lodged, till they made my bones crack and my flesh become a perfect mummy. In short, after undergoing this discipline for about a quarter of an hour, I was glad to get away from them. However, the operation gave me immediate relief, which encouraged me to try another rubbing down before I went to bed, and it was so effectual that I found myself pretty easy all the night after. My female physicians repeated their prescription next morning before they went on shore, and again in the evening when they returned on board, after which I found the pains entirely removed; and the cure being perfect, they took their leave of me the following morning.

"This operation is universally practised amongst these islanders, sometimes performed by the men, but more generally by the women."

The modern school of massage in this country may be said to have been instituted by Mr Grosvenor, Professor of Surgery at Oxford, in the year 1825, who employed it to a great extent in the treatment of stiff, chronically swollen and contracted joints associated with a languid state of the circulation, thickening of the ligaments, and over-secretion of the synovial fluid; in cases of fracture where stiffness persisted after union; in cases of dislocation where impairment of motion persisted some time after reduction.

And now, I think, we have arrived at a time in the history of this method of treatment when everything points to its recognition by the physician and surgeon alike as a very useful and powerful additional means at his disposal for effectively dealing with many otherwise intractable diseases. It, of course, like many other methods of treatment, can be abused; but when properly applied, and employed in suitable cases, its effects are wonderful, and entirely satisfactory.

Massage belongs to the class of movements known as "passive," that is to say, the muscles are exercised without any effort of the will or central nervous aid of the person who is being operated on; and, as Dr Weir Mitchell remarks in one of his treatises, "The alternate grasp and relaxation of the manipulator's hands squeezes out the blood and allows it to flow back anew, thus healthfully exciting the vessels and mechanically increasing the flow of blood to the tissues which they feed." This bodily exercise increases the physical powers, giving more strength to resist sickness. It does for the body what intellectual training does for the mind—educates and strengthens it.

The effects produced by massage may, I think, be conveniently classified as—*1st*, Circulatory; *2nd*, Nervous; *3rd*, Moral.

1st, CIRCULATORY.—All muscular movements of the body, aided by respiration and the valves of the veins, assist the return of the venous blood to the right heart, these several forces constituting what is called the *vis à fronte;* but apart from this indirect effect on the circulation produced by passive muscular mevements, we have also in massage a direct mechanical pressure effect produced by the manipulations, all being made in the line of the venous and lymphatic currents, viz.:—

In Head and Neck.—From vertex over frontal, temporal, and occipital regions to root of neck above clavicles.

In Upper Extremities.—From tips of fingers to axilla.

In Lower Extremities.—From tips of toes to groins.

In Chest and Abdomen.—From centre line to circumference of front of trunk.

In Back.—From spinal column to circumference of back of trunk.

As examples of this class of effects, I may mention *effleurage* or stroking, and *pétrissage* or kneading.

In Effleurage the stroking movement is made with pressure varying from the very lightest touch to that of considerable pressure, the results of which are—1*st*, direct stimulation of the cutaneous circulation, which is evidenced by the reddening of the surface of the skin; 2*nd*, increased lymphatic absorption, so that if exudations are present their resorption is hastened; and, 3*rd*, increased interchange of capillary contents and tissue, which necessarily means improved nutrition or metabolism. Experiments have been made to demonstrate and prove that this lymphatic absorption is a well-marked effect of massage, by injecting both knee-joints of a rabbit with Indian ink. Afterwards one of the joints was massed several times in the day, the other being left alone; and on examining the joints, after killing the animal, the massed joint was found practically normal, and the lymphatics leading from the joint of that side discoloured, showing that lymphatic absorption had taken place, whereas the unmassed joint was found filled and blocked up with discoloured matter and a large amount of fluid.

In Pétrissage the muscles are seized between the whole length of the thumb and fingers, and a combined squeezing, rolling, and twisting motion is produced, which has the effect of alternately forcing out a volume of blood from the particular muscle which is being manipulated, as well as assisting the lymph onflow, and during the relaxations letting it fill again, thus mechanically reproducing one effect of exercise. We know that in ordinary muscular contractions the blood is driven from the deep into the superficial vessels, and this suggests the possibility of relieving deep-seated congestions, either of tissues or organs, by manipulations applied to the surface of the body, and systematic passive movements of the joints,—in fact, the production of a form of counter-irritation.

2*nd*, NERVOUS.—These effects are to a certain extent secondary to the circulatory, as it is by increasing the quantity and improving the quality of the blood-supply to the nervous centres and nerves that their functional activity is correspondingly exalted.

But in such manipulations as *Tapotement*, or hacking, and the various forms of vibrations, we have a means of directly influencing the nerves themselves, very much like the effect produced by stimulation with the Faradic electric current. There cannot be the slightest doubt that many nervous conditions are due to an abnormal arrangement of the molecular structure of the nerve tissue; and I think it highly probable that by means of these vibratory movements a normal condition of these nerve elements can be established in much the same way as in the surgical proceeding of nerve-stretching. For example, take a case of neuralgia. Here, as far as we know, the pain present is due to pressure on the sensory fibres of the affected nerve, due to some cause producing this abnormal molecular arrangement, or may be also to pressure produced by inflammatory adhesion, or fluid pressure, or pressure from abnormal growths. In such cases the results by vibration directly applied to the seat of pain are entirely satisfactory. Again, by direct stimulation of the central nervous system (posterior spinal nerve-roots), we can act on the sympathetic, which means that we have at our command a very powerful means of influencing the circulatory and secretory apparatus of the whole body.

3rd, MORAL.—The mind necessarily participates in all forms of exercise, for with all physical effort we have a concomitant intellectual act, this bringing about a harmonious action of body and mind, leading to a more perfect combination and regulation of movement. In this connexion also the confidence which we seek to inspire in our patients must have a very powerful moral effect, and this goes very far in all forms of treatment to carry a case to a successful termination.

The dieting of a patient undergoing massage treatment is of the greatest importance. I think the old idea of over-feeding in every case is not a sound one, for just as cases have clinical features and constitutional characteristics peculiar to themselves, so both the treatment and diet must be varied, according to the different temperaments and constitutions with which we have to deal. The bodily requirements for food differ within very wide limits,—that is to say, what would be considered good feeding by one is thought low feeding by another; and, as far as I can judge, much better results are obtained by adopting a middle course in this matter; and, as in the manual part of the treatment, a method of a gradual increase and as gradual a decrease of manipulations and surplus feeding, in some cases even an entire cessation of both for a time, should be the best plan, so as to accustom the various organs, secretions, and tissues to their new physiological conditions.

Before giving some cases illustrative of the treatment, I should just like to briefly tabulate the conditions in which massage will be found of great service in both medical and surgical practice.

(1.) MEDICAL.—Anæmia, general debility, neurasthenia, hysteria, neuralgia, muscular rheumatism. In these it is beneficial by producing more rapid circulation of blood and lymph, increasing metabolism, and removing waste products.

Paralysis.—More especially when associated with muscular atrophy. For these cases benefit is derived from direct nervous stimulation, which has an effect not only on voluntary but on involuntary muscular fibre, and can therefore be also used in such conditions as atony of stomach, atony of bladder, chronic constipation, etc.

Congestions of Internal Organs.—Stomach, liver, kidneys, spleen, uterus. In these it acts as a form of counter-irritation, drawing the blood from the deeper to the more superficial parts, and also through sympathetic stimulation, inhibiting the blood-supply and increasing glandular secretion and lymphatic absorption.

(2.) SURGICAL.—Sprains, dislocations, fractures, chronic joint affections, associated with œdema and stiffness, and without constitutional taint or presence of pus. In these it promotes absorption and breaks down adhesions.

Dr J. H. A. Laing advised that massage, when used in the treatment of constipation, should be combined with passive and active exercises of the abdominal muscles. Many forms of dyspepsia might be benefited by the same treatment. With regard to the Weir Mitchell treatment, it was often followed too closely. It required to be modified to suit individual cases. In many gynæcological cases abdominal massage (leaving alone the internal part), combined with exercises of the abdominal muscles, did much to improve the circulation about the pelvis, and often resulted in great benefit. It was very important that such exercises should always be given short of fatigue. Many cases of weakness after serious illness might also be assisted by massage and passive exercises. Massage was not sufficiently used for sprains and strains. It was usually thought in this country that a patient with an average sprain of the ankle should be laid on his back for six weeks. By the use of massage he commonly had such cases walking in a fortnight. The treatment should be begun on the day after the accident, and always at first above the injured part, which should not be touched until some of the effusion had gone. The first treatment might last an hour and a half. It should not be painful, but always soothing. After massaging, a bandage should be applied. By the second or third day passive movements should be made in all the correct directions, except that in which the strain had occurred. Next, the circulatory movements should be made. By the end of a week, with the aid of a bandage, the patient should be able to walk a little. In cases of acute traumatic synovitis in strong persons, by the use of massage the condition could usually be cured in a week.

Dr W. Allan Jamieson then read the following paper on MASSAGE

IN THE TREATMENT OF DISEASES OF THE SKIN:—For obvious reasons friction or kneading is unsuitable as a means of treatment in acute diseases of the skin, and even when the complaint affecting the integument has become chronic, has assumed an inactive or indolent phase, such manipulations, however gently practised, are liable to induce a recurrence or to light up afresh inflammatory phenomena. Hence the obstinate infiltration in chronic eczema is seldom adapted for dispersion by massage, and the solid lymphatic œdema of elephantiasis, or that left behind by repeated attacks of erysipelas, or occasionally by lupus of the limbs, is hardly suitable to be dealt with by such methods. But there are two conditions in which massage is advantageous. One of these is during the *early stage of alopecia prematura.* While seborrhœa is often the cause of that dystrophia capillitii ending in irremediable baldness, there is frequently associated with the progressive loss of hair a shrinkage and fixation of the scalp, which acts destructively on the hair-bulbs by a process of compression, and by cutting off or lessening that abundant blood-supply beneath the hair roots which, like a subcutaneous marsh, feeds the hair papilla and maintains the succulence of the bulb. To postpone, if not to arrest entirely, this contraction, massage is useful. The scalp in such cases should be kneaded and moved backwards and forwards, as well as sideways, on the aponeurosis below, several times a day, for a few minutes each time. This comes in as an adjunct to the therapeutic measures intended to cure the seborrhœa. Such manipulations have certainly proved of service in some cases, and are calculated to do much good if commenced in time and if steadily persevered in. The second condition in which massage is of use is in the rare disease known as *symmetrical diffuse scleroderma,* in that form of it in which infiltration and not atrophy is conspicuous. Here the hide-bound state of the integument is substantially benefited by prolonged soaking in warm water, combined with judicious massage. Having had the opportunity of observing for three years a case of this nature, it has been in my power to verify the continuous amelioration which occurred in consequence of this mode of treatment. The induration slowly and almost uninterruptedly melted away. Thus the entire skin of the back, at one time more like the hide of a hippopotamus than the integument of a human being, became soft and pliant. The scalp, from being tightly stretched over the cranium, acquired a considerable degree of motility, and hair again began to sprout on a surface formerly as smooth as a billiard-ball, and almost as dense to the feel. In such a case one must bear in mind, however, that there is a tendency to spontaneous improvement. Still, allowing for this, the patient, as well as myself, felt convinced that the systematic massage was an important element in procuring amendment. Massage has therefore a distinct if somewhat restricted place in dermatological therapeutics.

Mr Joseph Bell said that a serious sprain—one that might be described as being as bad as a dislocation, only the bone had got back to its place again—would not stand massage. But mild sprains ought to be treated by early massage and early movement. He even went further, and treated every case of Colles' fracture in which he had the opportunity without splints and with massage. This treatment, however, could only be adopted with patients who could be thoroughly trusted, and it was necessary to see them every day for a time. There was a form of joint disease with effusion occasionally seen in delicate young men or women, usually in the hips or ankle, which looked as if it was going to be a white swelling, but was not. It was generally attended with, and caused by, weakness of the muscles of the thigh. The tendons crossing the joint did not seem to keep it together, as it were, and it seemed to have an opportunity to fill. Treatment by rest and blistering did no good in these cases, but they were wonderfully improved by massage of the muscles of the leg and thigh. In using the Weir Mitchell treatment for neurasthenic cases, the one essential was to get a really good nurse. Success depended more upon the personal equation of the nurse than upon anything else.

Prof. Chiene said that massage, or rubbing, was an important matter in practical surgery. He wished to make some remarks about its use, with special reference to the motor system. It was of value, firstly, as a means of relieving pain. For this purpose it required to be gentle, and upon the nerve terminations. Secondly, it was of value for the prevention of adhesions, in which case it required to be of a firmer character. Thirdly, it was of importance as a means of breaking down adhesions. He frequently saw cases in which firm adhesions had been allowed to form in joints after sprains. It was necessary to break them down. This could be done in two ways. The first way was, after having discovered the seat of an adhesion, which was generally indicated by a painful point, to relax the part so as to get a run, as it were, and then suddenly and forcibly to extend. The second way in which one could break down such adhesions was by a kind of massage, which consisted in a firm rotatory movement with the thumb, by which means it was possible to act on the deeper structures through the skin. It was wonderful how adhesions could be broken down and pain relieved in this way. He was glad to hear what Dr Bell had said about rubbing in fractures. It had been his practice to recommend in similar cases rubbing after the first week, but he believed in the use of splints in the intervals. In traumatic effusions rubbing was certainly of the greatest value. It should be begun—when in the knee-joint, for example—on the proximal side, and not from the toes upwards. When should they begin to rub a sprain to prevent effusion? Dr Laing said the day after. He wondered why he had not said the *same* day. That was where the bone-setters were getting the better of them. The earlier they began rubbing a sprain the better; but just as in fractures, he believed in intervals of rest with the application of some form of splint. He was coming round to the belief that they would have fewer tubercular joints if they were not afraid to rub them in the early stage. He thought that rubbing, by increasing the vascularity and encouraging free leucocytosis, would result in a more active phagocytosis in the part and destruction of the tubercle bacilli.

Dr P. A. Young gave an account of a typical case of neurasthenia successfully treated by the Weir Mitchell system. He had also a case of persistent vomiting, lasting many years, which had become thoroughly well under the same treatment after other plans had failed. Massage was also of great value for old people who suffered from weak digestion and general ill-health. He was convinced that there were many cases in which the Weir Mitchell system was a most powerful means of treatment, and indeed the only one that would do any good.

Mr C. W. Cathcart said that he had made some observations upon the effects of massage on recently amputated limbs. One effect was to quickly empty the remaining blood. In one instance in which the muscles were still active, on massaging the limb fibrillar motions were produced in them. This seemed to show that massage, in addition to increasing the circulation through a muscle, acted in the same way as electricity, and stimulated the muscle fibres themselves. Probably mechanical stimulation would also increase metamorphosis in glands, and the activity of the tissues around inflammatory products. Regarding tubercular joints, there was undoubtedly a great contrast between the effects of movement upon them and upon a simple sprain. He believed that the tubercular condition was increased if movement of the limb was allowed. He had seen benefit result from rest, and when movement was permitted again the tubercular condition got worse. He therefore would hesitate to apply massage to a tubercular joint. He had seen such cases sent in from the country, where they had been treated by bone-setters with massage, which had seemed to increase the disease. He had often seen a tubercular condition increased after scraping, owing doubtless to the planting of the tubercle bacilli on the raw surface, while formerly they had been surrounded by leucocytes. If massage was to separate the bacilli from the leucocytes, he would certainly hesitate very much before he tried it in tubercular joint disease.

Dr Sommerville, Glasgow, said that he had recently been in Sweden, and had there studied massage and medical gymnastics. There were, he thought, two reasons why they were not more successful with massage in this country. The first was that they were not sufficiently scientific in the way they went about it. It was not sufficient merely for the doctor to order massage. It was his part to prescribe the kind of manipulations, and for what time they were to be carried out. The second was that they did not combine judicious exercises with massage. In Sweden the doctor wrote a prescription of medical gymnastics for the patient to carry out.

Dr James Ritchie said that every case of neurasthenia was not benefited by massage; that massage alone was not sufficient; that the moral influence of a suitable nurse was of the utmost importance; and that whenever there was a morbid craving for sympathy, causing the patient to speak continually about her symptoms, or if the friends in any way kept her from making efforts on her own behalf, then the sooner the patient was away from her friends the better. He believed that in cases of malnutrition it was an advantage to use the inunction of oil instead of dry rubbing, as much of it was absorbed by the skin, and helped to increase the weight of the patient.

Dr James Carmichael said that he feared from the experience he had had that there was a tendency to this method of treatment being taken up by unlettered persons, particularly by those people whom they were now in the habit of employing themselves,—the masseurs and the masseuses. He had seen more than one case in which harm had been done by patients going to one of these persons, and being treated without any scientific principle whatever. It was their duty as practitioners to see to it that they did not let massage descend into the regions of charlatanism. It was really a most valuable method of treatment, and they should endeavour to keep it on a high scientific level.

Dr Affleck gave some illustrations of cases in which he had found the practice of massage as a manipulation very serviceable. In several cases of alcoholic paralysis he had effected a cure by its use. He had found, also, that chronic muscular rheumatism was much benefited by it. Massage sometimes had an extremely soothing effect in insomnia. In cases of so-called "neurasthenia," massage was often the last resort of a baffled practitioner. In many cases it was successful, but there were also numerous failures. He agreed with what previous speakers had said as to the importance of a suitable nurse. That could not be too strongly insisted upon. There was no doubt that massage treatment was an important addition to therapeutics, but it was unfortunate that it was mostly a luxury of treatment for the rich, and was so little available for the poor. They should all try to see that it was kept within the lines of legitimate medical practice.

Dr George Hunter said that in sending neurasthenic cases for special treatment they should make sure that the case was not one of serious organic disease. He had seen one such case which turned out to be really one of bulbar paralysis.

Dr John Playfair said that in cases of real neurasthenia the treatment must be carried out thoroughly. That was how Dr

Playfair of London had so many successes. There should be two nurses,—a general one, and a special massage nurse.

Mr H. J. Stiles said that when recently in Berne he had had his attention specially directed to the treatment of early tubercular disease of joints by Prof. Niehans, who assured him that he had found it very beneficial, especially in the case of those joints of which the synovial membrane could be most thoroughly got at.

The President said that massage no doubt had a relationship with the treatment of mental disease. The first two or three cases in which he had employed it, after having seen it recommended by Dr Weir Mitchell in Philadelphia, were very successful. Since then, however, his experience of massage in mental disease had been, on the whole, more unfavourable than favourable. It was most applicable in melancholia. He had tried it in many such cases, and beyond any doubt it had done good, but always when combined with exercise, and when the patient was not confined to bed, or entirely secluded. The more the case was one of typical mental disease, the less room was there for massage. The more the case was one of trophic deficiency and neurasthenia, the more room there was for massage. Anything that would fatten a melancholic would do good, and in this way at least massage was beneficial in some cases. He had certainly seen a great number of melancholics made a great deal worse by the Weir Mitchell treatment, and especially by the seclusion. He thought they might take it that the Society thoroughly agreed with, and homologated, Dr Croom's energetic protest against the use of internal massage of the pelvis, which had been recommended in a recent French book.

Dr Halliday Croom briefly replied.

Dr Urquhart, Perth, who was unable to be present at the meeting, writes as follows:—The Weir Mitchell treatment seemed to offer peculiarly favourable results for asylum physicians. Patients could be absolutely separated, and minute attention to details could be insured. But, however careful and persevering, I regret to say that the results have not been at all satisfactory. I have, indeed, arrived at the conclusion that in the great majority of cases of actual insanity, massage aggravates delusions, and in no way removes the mental symptoms. This is very remarkable, because such cases of less severe neuroses as have been so treated have yielded most satisfactory results. If the cure has not been permanent (we call no man happy until he is dead), at all events there has been such temporary alleviation as to make life worth living for those to whom it had been a grievous burden. I venture to explain this notable difference by the results of treatment directed more towards intestinal disinfection, rest and quiet, graduated exercise, and careful dietary. The omission of massage seems to be in the patient's interest. I also hazard the theory, that in cases of melancholia occurring in the middle classes of society, such as come here late in the day, after treatment in private care, the brain cells are already too exhausted to bear the strain of even the most moderate massage. There is one notable exception to these remarks, and were it not for the importance of emphasizing it, I should not have troubled you with this communication. I refer to the results of massage of the abdomen in cases of obstinate constipation and inattention to the calls of Nature, which are most common and most intractable in our practice. It has come to be a part of our routine treatment, not in an empiric or unintelligent manner, but because it is susceptible of daily proof positive—unfailing when properly administered.

AN ABSTRACT of Dr PAUL NIEHANS' paper "On the Results of the Treatment of Tubercular Disease of the Wrist-joint with Massage as compared with the Results by Resection." *Fest-Schrift*, Prof. THEODOR KOCHER, 1891, S. 167–196.

AT the meeting of the Edinburgh Medico-Chirurgical Society (May 16th, 1894) devoted to a discussion, opened by Dr Halliday Croom, on "Massage as an Adjuvant to Medical, Surgical, and Gynæcological Practice," Prof. Chiene referred to the possible value of massage in certain cases of early tubercular disease of joints. Dr Paul Niehaus, one of the surgeons to the Inselspital in Bern, while showing the writer round his wards, directed special attention to a case of tuberculosis of the wrist which was being treated by massage. He stated that he had adopted this method of treatment in place of excision since the year 1880, and referred to the above-mentioned paper, of which I propose to give the following abstract, as it serves to show that as regards the wrist, at any rate, the treatment is well worthy of further trial.

Niehans refers to the difference of opinion in the minds of surgeons regarding the value of excision of the carpus in tubercular disease of the wrist. He admits that a complete and permanent cure may be brought about by excision, but so disappointed was he with the after functional-results that he began in 1880 to abandon the operation, and to substitute for it the treatment by massage. His paper contains details of thirteen cases so treated. The cases were kept under observation for several years after the treatment had terminated. The duration of the treatment occupied, according to the severity of the case, from one and a half to twelve months. During the earlier period the manipulations were carried out by himself, subsequently under his superintendence, and finally, under the patient's own directions, by a relation. Niehans claims for the treatment better results than the most successful which have been obtained by excision. Although the duration of the treatment is in many instances prolonged, he points out that even in the case of excision the maximum functional-results are often not reached until long after the wound has healed. For details of the cases the original paper must be consulted; the illustrations which accompany it are reproduced from photographs, and are well calculated to show to what a remarkable extent the movements of the hand and fingers may be restored. The results of the treatment may be summed up shortly as follows:—(1.) Complete and permanent healing resulted in all the cases recorded. (2.) The normal configuration of the parts was more or less restored. (3.) It is, however, in the greater degree to which the functional utility of the hand is restored that this treatment appears to possess such an advantage over excision. The amount of interference with the muscular attachments and the extensive formation of adhesions are serious obstacles to good functional results after excision. In the cases treated by massage, the average amount of palmar flexion at the wrist was rather more than 45°. Abduction of the thumb and flexion of the first phalanges—movements which are especially apt to be defective after excision—could in the majority of the cases be carried out almost to the full extent. In some instances the patients were able to follow occupations necessitating severe manual labour.

The method of carrying out the treatment was as follows:—For the first few days—that is to say, as long as the parts are painful—preliminary manipulations in the shape of centripetal stroking of the forearm is employed. Later, while the fingers gently compress the under surface of the carpus the dorsal aspect is more or less firmly stroked and rubbed with the thumb. Next, the terminal phalanges are pressed along the dorsal aspect of the interosseous spaces, while the thumb is applied in like manner to the palmar surface of the thenar eminence. The whole *séance* occupies at first ten, and later fifteen to twenty minutes, and is repeated once daily. During the remainder of the twenty-four hours the forearm and hand are supported by a splint, which extends downwards only to the heads of the metacarpal bones, and which dorsiflexes the wrist as far as possible. The fingers are thus left free, and the patient is encouraged to move them freely from the very first.

Tenderness disappears usually in a fortnight or three weeks, after which the manipulations may be carried out more firmly and energetically. The gelatinous thickening gradually disappears. Here and there it is more persistent, and must be attacked by a rotation movement of the thumb, pressed firmly and vertically upon it (Quetsch-Knetung)—a manipulation which should not be employed daily, and only during an advanced stage of the healing. Osseous thickenings are often very sensitive, and may take a long time to disappear, but they do so eventually, if the treatment be persevered with. Towards the conclusion of the treatment the part may be massaged twice daily. During the whole period of treatment the muscles are to be carefully and thoroughly exercised. The various joints are to be moved individually, and these movements should alternate with massage at each sitting. The movements of the second and third phalanges soon reappear; those, however, of the first phalanges and of the thumb are more troublesome to regain. In some cases dorsiflexion of the wrist is permanently lost.

The presence of sinuses does not prevent or contra-indicate the treatment; the part is massaged in a direction which will most favour the emptying of them. The manipulations should not pass directly over the openings of the sinuses, and to prevent the entrance of detached epidermic scales these should be covered with boracic ointment. The *séance* being completed, the sinus is cleaned, an antiseptic dressing applied, and the part supported upon the splint already mentioned.

The presence of an abscess, or its formation during the treatment, is, according to Niehans, not to be deplored, as it affords the most rapid means of disposing of the inflammatory products. During the development of the abscess the massage is still to be continued daily, but the manipulations do not encroach upon its immediate area. After opening the abscess, proceed in the manner already indicated when sinuses exist.

The massage treatment of a tubercular joint has been objected to on the grounds that it is liable to cause dissemination of the tubercle to more or less distant parts. Niehans has never seen any evidence of this; on the contrary, in addition to the local improvement there is also marked improvement in the general health.

Niehans gives the following explanation of the curative action of the treatment:—The tubercular granulations are crushed and small extravasations are produced, which set up a healthier reactive inflammation, resulting in the formation of a regenerative and contracting tissue. The vitality and the resisting power of the tissue becomes so increased that the tubercle bacilli are deprived more and more of the conditions necessary for their existence, until finally they perish. The effect is maintained, not only during the period of treatment, but the tissues retain their heightened power of resistance for years.

In young children the treatment is necessarily difficult to carry out, but if combined with the scraping of sinuses and abscesses it has, in the hands of Niehans, always proved successful. As regards adults, he points out that a good result is not to be anticipated if the patient be above forty-five or fifty years of age. In cases, therefore, of senile tuberculosis of the wrist, excision or amputation must be resorted to.

With reference to the value of this treatment in the case of other tubercular joints, Niehans is careful to point out that he has not met with any degree of success. Good results are only to be obtained when proper access can be got to the tubercular tissue. The hip and shoulder joints are therefore quite unsuitable, whilst the knee, ankle, and elbow are also unsatisfactory. During the fourteen years in which Niehans has employed this treatment he has only had two knee cases which were completely cured. All the others came ultimately to operation. In consequence of the good functional results which follow excision of the elbow and ankle, the want of success in their treatment by massage is less to be deplored. HAROLD J. STILES.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LV.—MEETING VII.

Wednesday, 13th June 1894.—Dr A. H. FREELAND BARBOUR, *President, in the Chair.*

I. Hugh Lewis Hughes, L.R.C.P.&S.Ed., and S. Glanville Morris, M.B., C.M., were duly elected Ordinary Fellows of the Society.

II. *Dr J. W. Ballantyne* showed a copy of Lycosthene's work on Teratology, which he had recently acquired. The work was rarely seen nowadays, there being no copy in the Edinburgh medical libraries, and perfect specimens fetched a good price. The author was an Alsatian, and his work was published at Bâsle in 1557, four years before his death. It is copiously illustrated with quaint drawings of malformed infants and animals, and in many instances the calamity supposed to be foretold by the monstrous birth is also portrayed.

III. *Dr Brewis* read a paper on INSPECTION OF THE FEMALE BLADDER AND URETHRA, WITH SPECIAL REFERENCE TO DR HOWARD KELLY'S METHOD, which will appear in a future number of this Journal.

The President thought the advantage of Kelly's method was the simplicity of the instrument used. The electrical apparatus had always to be kept in order, and he agreed with Dr Brewis that it would require some experience before one became familiar with the appearances which it gave. He had seldom seen permanent incontinence following urethral dilatation.

Prof. Simpson said the Society were much indebted to Dr Brewis for his interesting communication. He (Prof. Simpson) had been impressed, on reading Dr Kelly's paper, with the value of the method which, with characteristic enterprise and ingenuity, Dr Kelly had devised for exploring the female bladder. He had not yet attempted to put it in practice, because it seemed to require a rather complicated set of implements, and he had said to himself that the method was sure ere long to be developed in a simple fashion that would allow of its more frequent employment. Dr Brewis's paper had shown that this simplification was attainable, and the success which he had experienced would encourage them to have recourse to the use of Kelly's method in some of the more difficult cases of vesical trouble.

Dr Haultain said he thought the Society were indebted to Dr

Brewis for bringing before them Dr Kelly's method of inspecting the bladder. Doubtless it was a distinct advance in bladder exploration, but he must say that the cystoscope seemed to have its advantages over this new method, and he could speak from a very considerable experience in the use of the former. Firstly, the cystoscope did not entail in the least degree the disturbance of the normal relation of parts,—the patient could have her bladder thoroughly examined, and walk home immediately afterwards. By Kelly's method anæsthesia was almost a necessity, and the necessary dilatation and tearing of the urethra required confinement to bed for some time after. It was, in fact, a surgical operation. It had been urged by Dr Brewis that the view got by the cystoscope was unnatural, from the bright illumination, while from Kelly's direct method a better conception of the normal condition of the bladder mucosa could be obtained. Now, he considered this merely a matter of comparison from a certain standard, this standard no doubt differing in appearance with the direct and reflected method, yet both represented the same thing, and could only be compared with the seemingly normal condition, which could only be arrived at from the experience of previous examinations. Perhaps the greatest objection to the method was the dilatation of the urethra, a procedure he always to a certain extent dreaded, having seen two or three cases of permanent incontinence resulting from it; he therefore considered that for an ordinary diagnostic examination of the bladder the cystoscope should, if possible, always first be used before such extreme measures were resorted to. The great advance in the method seemed to him to be the catheterization of the ureters, which would throw much light on the state of one or both kidneys, a most important point before performing nephrectomy and other operative procedures.

Dr Brewis, in reply, thanked the Fellows for their kind reception of his paper. He admitted that electric illumination with the Nitze cystoscope gave excellent results, but they did not equal those obtained by Kelly's specula, because with the latter the interior is viewed by direct inspection, applications can be made directly to diseased areas, and the ureters can be catheterized. Dr Brewis had dilated the urethra a great number of times to admit the forefinger, and had never had a case of permanent incontinence. In one case only the incontinence lasted forty-eight hours. He had out-patients with bladder affections coming to him, and returning home immediately after applications of perchloride of iron, iodine, carbolic acid, etc., were made to the affected parts. In these cases he used a speculum with a diameter of 12 millimètres, and not even temporary incontinence followed.

IV. *Dr Berry Hart* read the following NOTE ON A SIMPLE MEANS OF RECORDING AND INDEXING MEDICAL LITERATURE:—

All of us must have felt the necessity of using some means of recording and indexing for future use the results of our professional reading. When one is reading of some special subject, it is easy to summarize and record it in a special note-book; but the task of doing the same in miscellaneous steady reading in, say, midwifery and gynæcology is much more difficult. The difficulty is increased, too, by the fact that one's reading is not always done at home, but in some of our medical libraries. We may then not have a note-book with us, and a reference is neglected, and only recovered afterwards by a tedious hunt through journals, year-books, or in the *Index Medicus.*

Another difficulty in regard to note-books is the indexing of subjects. This takes time, and is usually grudged by one. For some time past I have used the following plan, and think it worthy of a test by others than myself.

I use slips of thin tough paper, semi-transparent, gummed at one edge, and easily carried in a small case. These can be used as follows:—

1. When studying a paper, one writes first on the slip the exact title of the paper and journal, etc., in which it appears.
2. If necessary, a short abstract or summary of the contents of the paper may be jotted down at the time.
3. Any reference to another paper likely to be consulted can be noted on another slip for future use.

To index these I take a standard text-book in gynæcology and midwifery, and gum these slips in at the part of the book where the subject treated of in the paper is considered. By this means I collect under each heading of the text-book the new literature on the subject. It is therefore at once available for revision, lectures, or preparing new editions of text-books. The slips may also be used in the following way:—

4. Lecturers may write on them more recent and correct statements of details, and gum them in over the older view, thus preserving both.
5. Illustrative cases from hospital or private work can be shortly summarized and inserted appropriately.

The special advantages of this plan seem to me to be its simplicity, portability, and the saving it is to one's time and memory.

The slips and case may be had from Messrs Macniven & Wallace, 139 Princes Street, Edinburgh.

V. *Dr J. C. Webster* read a paper on SOME OBSERVATIONS REGARDING CHRONIC HEART DISEASE COMPLICATING PREGNANCY AND LABOUR.

Prof. Simpson thought the Society were indebted to Dr Webster for his interesting communication. It presented a useful history of the subject, and was further valuable from the record of his own observations, and the line of treatment he had suggested commended itself as that which was theoretically correct and had proved successful in practice. Whilst it was important to have it pointed out that mitral stenosis was specially dangerous, and that a woman who had recently acquired her heart lesion was more liable to suffer from pregnancy and labour than one with a lesion of old standing, it should also be kept in mind that the prognosis in each individual case could not be formed merely on general principles as deduced from statistics, but must keep in view the condition of the patient. He (Prof. Simpson) had seen cases where the mitral stenosis was not attended with dangerous symptoms; and in one patient in the old Maternity, with aortic disease resulting from a rheumatic fever of quite recent date, the labour and puerperium passed off without any morbid phenomena.

Dr Webster replied.

VI. *Dr J. W. Ballantyne* communicated the following summary of a paper on the ANCIENT GREEK AUTHORS AND INTRA-UTERINE INJECTIONS, by *Dr Georges Coromilas*, Calamata, Greece:—

The author claimed that there was evidence in the writings of Hippocrates, Oribasius, Paulus Aegineta, and Galen to show that these writers were acquainted with the use of *intra-uterine* injections. Hippocrates divided the generative organs into three parts,—first, the external genitals; second, the genital organ or vagina; and third, the uterus. He also used for each a special kind of substance to be injected: wine with honey for the external genitals, goose's grease for the vagina, and oil with honey for the uterus. Author believed that Hippocrates was the first to make intra-uterine injections.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

BONE-MARROW IN THE TREATMENT OF PERNICIOUS ANÆMIA.—Prof. Thomas R. Fraser, of the University of Edinburgh, in the *British Medical Journal* of 2nd June, gives an abstract of a communication he made to the International Medical Congress held at Rome in April last, regarding the value of bone-marrow in the treatment of pernicious anæmia:—

"The patient, a gardener, 60 years of age, entered the Royal Infirmary on September 30th, 1893. His symptoms were frequent vomiting and diarrhœa, œdema of the feet and ankles, moderate and irregular pyrexia, dimness of vision, retinal hæmorrhages, anorexia, dyspnœa, and latterly complete prostration. The illness had lasted for about four months.

"*First period*, two weeks; no medicinal treatment. During this period the hæmocytes of the blood varied from 1,860,000 to

1,460,000 per cub. mill., and the hæmoglobin from 28 to 30 per cent., the specific gravity being 1038. There was great distortion in the shape and variation in the size of the hæmocytes, which did not form rouleaux. Retinal hæmorrhages were present in both eyes.

"*Second period*, two weeks and a half; ferrous chloride, 6 to 12 grains daily. The hæmocytes and hæmoglobin steadily fell to 900,000 per cub. mill. and 20 per cent. respectively, and the specific gravity to 1036.

"*Third period*, eight days; arsenic (15 to 30 min. of liquor arsenicalis daily) was given in addition to 12 grains of ferrous chloride daily. Still further deterioration occurred in the hæmocytes and hæmoglobin, the former falling to only 843,000 and the latter to 18 per cent., but the specific gravity remained at 1036.

"*Fourth period*, three weeks; arsenic and iron were continued in the above doses, but ox bone-marrow was now also given by the mouth, uncooked, and in the quantity of three ounces daily. An almost immediate improvement occurred, so that at the end of this period the hæmocytes numbered 1,800,000, the hæmoglobin amounted to 35 per cent., and the specific gravity was 1042. The patient now began to recover strength; he could remain out of bed for several hours each day, and the appetite was greatly improved.

"*Fifth period*, twenty-six days; ox bone-marrow, arsenic, and salol (15 to 30 grains daily). The improvement was continued. The hæmocytes rose to 2,470,000, the hæmoglobin to 55 per cent., and the specific gravity to 1047. The patient felt much stronger, and his complexion was distinctly pink, and had almost lost its original yellow hue. He had also gained in weight.

"*Sixth period*, thirty-two days; ox and calf bone-marrow and salol (30 grains daily.) The improvement was still further continued, so that the hæmocytes reached an absolute maximum of 4,130,000, though they afterwards fell to 3,400,000; the hæmoglobin rose with the hæmocytes to 75 per cent., and also fell to 70 per cent., and the specific gravity became 1058. The blood had now a healthy appearance. The patient was now able to do light work in the ward without fatigue; the alimentary system was perfectly healthy; œdema, pains, headache, pyrexia, and the venous *bruits* in the neck had disappeared, and the skin had a healthy appearance.

"*Seventh period*, one month; ox and calf-bone marrow and ferrous chloride (6 to 12 grains daily). The hæmocytes remained, with some oscillations, at about 3,400,000; the hæmoglobin averaged from 70 to 75 per cent., on one occasion reaching 80 per cent., and the specific gravity remained steadily at 1059. The patient felt strong, and enjoyed assisting in ward work, such as carrying coals up a long flight of stairs. He remained out of bed all day, and all traces of retinal hæmorrhages had disappeared.

"*Eighth period;* ox bone-marrow, iron, and salol. The improvement was maintained, so that the hæmocytes reached 4,000,000, the hæmoglobin 85 per cent., and the specific gravity 1060. The patient was now practically in a normal condition. His appetite was good, and his appearance that of a healthy man."

It thus appears "that no benefit was obtained—that, indeed, deterioration occurred—during the prolonged administration of iron and arsenic in both medium and large doses; but that the remarkable improvement which occurred was produced only after the administration of bone-marrow had been commenced, while it continued to be produced during periods in which neither arsenic nor iron were being administered. The patient was treated with only bone-marrow for a period of 27 days, and the improvement was well maintained to the end of this period. He was discharged from the hospital because of his urgent wish to return to work as a gardener, for which he declared himself more able than he had been for the last five or six years."

THIOFORM.—Julius Schmidt (*Therap. Monatsh.*, April 1894) states that thioform is a greyish-yellow powder, which is a chemical combination of bismuth, sulphur, and salicylic acid. It is tasteless and odourless, insoluble, and was first prepared as a substitute for iodoform. This expectation has been verified in so far that surgically its value is equally great, but the specific action of iodine as required in tuberculous affections is not obtained. When applied to fresh wounds thioform produces rapid drying of the surface, leading to a more rapid cicatrization than has been observed after the use of any application; this was noticed in extensive surface lesions, such as burns, weeping eczema, and gangrenous patches, the latter having healed in four days. The author tested the powder in five cases of ulcer of the leg which had resisted other treatment. The ulcer having been cleaned and disinfected, the thioform was thickly dusted over it, and covered with cotton wool and a bandage. Every fourth day the whole dressing was changed; and though the patient continued to walk during the treatment, the cure required two to three weeks only. Some pain was occasionally produced, but no sign of irritation could be seen. Similar results in the practice of other surgeons are given. Finally, the author used thioform internally, after having satisfied himself as to its non-poisonous character; and with daily long-continued doses of fifteen grains, better, though similar, results were obtained than with salicylate of bismuth.—*Brit. Med. Journ.*, June 9th, 1894.

FERRATIN.—Ferratin is prepared by exposing a mixture of certain proportions of white of egg and an iron salt to the action of slight heat in an alkaline medium. It is a red-brown powder, little soluble in distilled water, but soluble in presence of soda. Marfori (*Ann. di Chimica e di Farmacologia*, February 1st, 1894) has investigated this substance, and his conclusions are as follows: —It contains from 7 to 8 per cent. of iron. It is absorbed in notable quantities from the intestines, and when injected directly into the blood stream it does not appear to be excreted either by the kidneys or the intestines, save in minute quantities. This is a great contrast to what happens with the inorganic salts of iron, which are mainly excreted into the intestines. It is a remarkable fact that the liver of many animals examined is found to contain naturally a substance closely resembling the artificial ferratin, and in considerable abundance. It appears to be also identical with the "hæmatogen" isolated by Bunge from the egg. Bunge proved that this substance serves as material for the formation of hæmoglobin, so that ferratin should be a really valuable blood food. Clinical experience has proved it to act in this way, and without causing any constitutional disturbance. It may be given in doses of 15 to 30 grains daily, care being taken not to associate it too closely with acid materials.—*Brit. Med. Journ.*, June 16th, 1894.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

The Treatment of Neuro-Syphilides.—Under this name Leistikow includes a number of syphilitic eruptions, which have been hitherto classed together as roseola tardiva, roseola circinata, leucoderma, etc. These occur in circles, rings, gyrate and pigmented forms, are not infiltrated, are permanent, and react with difficulty to the ordinary anti-syphilitic remedies. He records four instances, all of which appeared within the tertiary cycle, in persons who had had a mercurial course. These, after resisting mercury and iodide, were cured by the local application of chrysarobin and pyrogallol—in the limited patches used in plaster or lotion in spirit and ether, in the more widely diffused in ointment—in a comparatively short time.—*Monatshefte für praktische Dermatologie*, 15th Feb. 1894.

Lupus Erythematosus as an Imitator.—Dr Radcliffe Crocker directs attention to this phase of lupus erythematosus, which has been rather overlooked. He says that, as we usually see it, it is a scaly and often a crusted eruption, but in a small number of cases the skin surface is quite undisturbed, and only presents the appearance of red, thickened, well-defined, smooth patches remarkably like an erythema multiforme, from which it is distinguished by its slow development, its persistence and tendency to spread at the margins, with or without some central involution. Eventually, however, it is very likely to become scaly and develop into the common form, with horny plugs deeply inserted into the sebaceous orifices. He relates two instances which were like erythema tuberculatum, and one like erythema papulatum. In another case, besides lupus erythematosus of the face, there was an eruption on the breast, apparently like that on the face, but on the back and limbs there were thickly crowded, slightly raised, flattish elevations, mostly an eighth of an inch in diameter, pale red and slightly scaly, which came out in spring and autumn, lasted a month or so, and then faded. The most interesting case was one in which the eruption was like lichen planus. The eruptions here first came on the wrist and thumb, and were pale red flat nodules, accompanied with slight itching. The case certainly was very suggestive of lichen, but a lesion removed from the nape of the neck showed, when examined microscopically, the characters of lupus erythematosus. An illustration of this case shows the resemblance.—*Journal of Cutaneous and Genito-Urinary Diseases*, Jan. 1894.

THE BEST FORM OF GLYCERINE-JELLY.—Dr Menahem Hodara of Constantinople has instituted an investigation into the properties of glycerine-jelly as introduced by Pick and modified by Unna. It ought to melt at a low temperature, so as to render its employment as little painful for the patient as possible, since a hot, scalding jelly is disagreeable. On the other hand, it must set at a comparatively high temperature, in order to become firm as soon as may be; and it should possess considerable contractility. The conclusion arrived at, after a large series of observations, is that for a soft jelly the following formula is best:—℞ Aquæ, 55·0; gelatinæ, 12·5; glycerini, 12·5; zinci oxidi, 20·0. This melts at 100° Fahr., and sets at 82°. If a hard, very contractile jelly is desired,—℞ Aquæ, 50·0; gelatinæ, 15·0; glycerini, 10·0; zinci oxidi, 25·0. This melts at 102°, and sets at 87°. For poor people a cheap jelly, which sets at a lower temperature, is thus compounded,—℞ Aquæ, 50·0; gelatinæ, 10·0; glycerini, 10·0; zinci oxidi, 30·0.—*Monatshefte für praktische Dermatologie*, 1st March 1894.

ON THE INFLUENCE OF THE EARLY INTERNAL MERCURIAL TREATMENT ON THE COURSE OF SYPHILIS.—Jullien, in a paper read at the Rome Congress, remarks that there is little agreement among syphilologists on the question when general treatment should be begun in syphilis. While some prescribe mercury directly the existence of a hard chancre is determined, others prefer to wait the advent of secondary symptoms. All assemblages of specialists affirm the stationary position of this topic, and it would seem that this want of agreement depends either on the tradition of various schools, or on personal impressions, rather than on proofs furnished by properly elaborated statistics. Jullien, in 1874, set himself to study the influence of early treatment on the development of late forms, and the observation of several hundred cases convinced him that a rapid saturation of the system with mercury served in a considerable proportion to hinder the early onset of tertiary lesions. More recently he has found calomel injections, the incomparable efficiency of which is indisputable, to yield still better results. Ten centigrammes of calomel dissolved in vaseline with every antiseptic precaution as to solution, syringe, and mode of injection, injected deep into the gluteal region, in the case of a moderately strong man, once a fortnight, is the medium dose; in the case of a weaker individual one smaller is to be used. The body weight is a useful guide. After two months the interval is to be extended to three weeks or more. He has not seen any evidence of mercurial intoxication, provided the kidneys act well and the gums are in good order. Should, however, gingivitis, a sensation of tension in the chest, or a liability to fainting appear, such indications of saturation indicate an interruption of the injections for a time. Under this mode of treatment the sole manifestations have been limited to slight mucous erosions, or a discrete, abortive, often corymbiform eruption on the skin. A number of instances in illustration are cited. He concludes by saying that as we possess a remedy which the experience of centuries has proved efficacious, it should be used as early as possible.—*Monatshefte für prakt. Dermatologie*, 1st May 1894.

NOTES ON THE EMPLOYMENT OF UNNA'S GUTTAPERCHA PLASTER MUSLIN.—Taenzer has contributed an excellent *résumé* of the indications for use of many of these now well-known plasters, and finds that they retain better than other substitutes their activity and adhesiveness even after the lapse of many years. Recently lanoline has been used instead of oleate of alumina, with distinct gain. The salicylic plaster muslin, besides its established efficacy in hyperkeratoses, warts, and infiltration in chronic eczema, has proved of value in dispersing the bands of scleroderma in an elderly female, and is also serviceable as a preparatory appliance in limited patches of psoriasis before using chrysarobin. A plaster muslin prepared with the last-named substance is cleanly and effective in localized patches of psoriasis or lichen planus, in neurosyphilides and chronic eczema. It obviates the drawback which chrysarobin has of staining the linen, for over the piece can be painted a layer of zinc jelly. The mercury carbolic plaster muslin is the one most in request. One of its most valuable indications is in the treatment of syphilis. It replaces very satisfactorily inunction. A small piece can be put on the back or thigh of an infant, or in a strong adult as much as a third of a metre. In children it may need renewal in from eight to fourteen days; in adults it may remain two to four weeks. The plaster should be painted over with the zinc jelly, and when a fresh piece is applied a new locality should be selected. Taenzer has so treated sailors satisfactorily, and has seen stomatitis only in two children. More beneficial still is its use in local syphilitic manifestations, as in the chancre itself, in palmar and plantar lesions, and in condylomata. In some pustular affections it is eminently useful, as in sycosis, boils and carbuncles, and obstinate acne. Pyrogallol plaster muslin is said to be nearly a panacea in lupus erythematosus.

The simple zinc oxide plaster muslin is quite unirritating, and is used in bedsores, in eczema of the nipple, and to localize various drugs to a restricted area. It is also employed in the construction of the dermal mask.—*Monatshefte für praktische Dermatologie*, 1st April 1894.

PERSISTENT ERYTHEMA AND ITS TREATMENT.—Payne, in considering this, sets himself, in the first place, to define what erythema is. The lesions of erythema are such as may be produced in ordinary skins by the transient action of an external irritant, acting in various degrees of intensity. The objection to this is that the causes of erythema are not necessarily always something transient. He divides the erythemata into the following classes:—1. Erythema produced by drugs or poisons, including a small but significant group due to decomposed articles of food (toxic erythema). These appear to be occasioned by alkaloids or ptomaines. 2. Erythema occurring in specific diseases, but distinct from the specific exanthemas of these diseases. These occur when the specific microbes have entered the body and are generating the ptomaines or other products to which the initial symptoms of these diseases must be due. Whatever the explanation of the manner in which they evoke the erythema may be, the direct action of these substances circulating in the blood on the tissues of the skin cannot be by any means excluded, and in persistent erythemas it seems inevitable that there is a direct injury to the tissues. 3. Erythema as a disease. There are in these great variety both in the severity and the duration of the symptoms, but in some the same lesions remain in the same spot during the whole duration of the complaint. A good many cases seem to be connected with exposure to cold, especially in the open air. In the persistent cases, of which he cites a series of examples, there is an erythematous affection which remains fixed on certain parts of the skin for weeks, months, or even years, without alteration of type; and this character alone would be enough, in cases sufficiently watched, to distinguish these eruptions from any possible form of eczema—which is easily made worse by local irritation—or lupus erythematosus, which goes on progressively to destruction of tissue. In treatment, internally, quinine in large doses, or salicylate of soda, will speedily remove the eruption in nearly every case; locally, lead as astringent on the bloodvessels, and carbolic acid, creolin, or coal tar in lotion, as sedative on the nerves.—*British Journal of Dermatology*, May 1894.

PSOROSPERMS IN CANCER.—Keser has made a painstaking investigation into pavement epithelioma (carcinoma of the skin), with special reference to the existence of coccidia, and has formulated the following conclusions. The figures observed in epithelioma and described as coccidia unquestionably exist, but they are nothing else than the result of a typical degeneration of epithelial cells. This opinion is based on—1. The fact that we find in epithelioma neither spores, nor sporiferous cysts, nor any other body resembling any parasites. 2. The fact that he has been able to observe all the stages of retrogressive evolution of the cell from their commencement, when the nucleus of the included body is yet quite identical with that of the enveloping cell or of the neighbouring ones, till the period when the analogy with the coccidium becomes most striking. 3. The manner in which the degenerated protoplasm comports itself in presence of certain colouring matters, at the beginning as well as at the end of its metamorphoses. 4. The fact that identically the same bodies are found in a tissue in a physiological condition where all intervention of a parasitic nature can be excluded, viz., in the balano-preputial groove in the fœtus. He adds that if on his part conclusions relative to the development of epithelioma under the influence of a *specific* parasite are negative, he is disposed to admit that in some cases cancer may have for its *determining* cause a micro-organism as well as a mechanical or chemical agent.—*Annales de Dermatologie et de Syphiligraphie*, February 1894.

Part Fifth.

MEDICAL NEWS.

UNIVERSITY OF EDINBURGH.—The following gentlemen have passed the Final Examination for Graduation in Medicine:—

William David Adams, M.A.; Charles Henry Adamson, Charles Crawford Aitken, Charles James Hill Aitken, George Nelson Alexis, *Samuel Hozlett Brown Allison, B.A.; John William Anderson, Robert Yuill Anderson, Juan Carlos Atkinson, Charles Ayres, B.A.; Andrew Balfour, Thomas Mackenzie Bartlett, Henry Bateson, *James Martin Beattie, B.A.; *Robert William Beesley, Wm. Bethune, Wm. Henry Bowie, Alex. Bremner, Benjamin Wm. Broad, Henry Reynolds Brown, M.A.; Robert Tennant Bruce, Wm. Henderson Bryce, Morton Burnet, David John Stewart Burt, Alex. John Campbell, *Alex. Keith Campbell, Chas. Seward Camtrell, Osmund Harry Chapman, Philip Francis Chapman, Ronald Murray Clark, Robert Cochrane, M.A.; James Allan Coutts, William Bannerman Craig, M.A.; David Macforn Rankine Crichton, Henry Mair Crosby, Alexander Dall, M.A.; Robert Thomas Davidson, Thomas Hanson Crossfield Durham, George Alexander Dickson, Ernest Ralph Dodds, Evelyn Arthur Wallace English, Thomas Evans, John Hoggan Ewart, Francis Harold Fairweather, Richard William Fell, James Fenton, Peter Joseph Henry Ferguson, John Smith Flett, M.A., B.Sc.; John Vincent Forrest, *Evan John Hewat Fraser, Simon Fraser, William Charles Fraser, *George Brook French, John William Geddes, Andrew John Gibson, James Anderson Gibson, *Thomas Gibson, M.A.; Herbert Hope Gill, *John Rutherford Gilmour, James Oliphant Goldie, Alexander Donald Mackenzie Grant, *Lachlan Grant, William Young Grant, George Douglas Gray, James Gray, Herbert Melvill Green, John Duncan Gregodson, Robert Grieve, William Haig, Frederick Hardwood Hardman, John Henderson, Ronald Zold Herdman, James Edgar Bewlitt, Arthur Heys, Edward Richard Holmes, Godfrey Hudson, Percy Theodora Hughes, John Kay Jamieson, Thomas Hill Jamieson, David Andrew Johnstone, Walter Edward Johnstone, M.A.; James Howard Jones, Thomas Henry Jones, John William Keighly, Bruce Curtis Kelly, Thomas Bernard Kenny, Alexander Edward Kidd, David Fraser Laidlaw, George Campbell Lang, John Adolphus Laing, John Lawrie, Robert Eddows Leggat, George Frederick Leicester, William Leslie, James Maurice Lincoln, *Thomas Gibson Lusk, Donald Gregor MacArthur, Alexander James Macdougall, Cecil John Read MacFadden, John Alexander Macfarlane, Alexander Joseph M'Ilroy, John Maciver, Malcolm M'Larty, John Finlayson Macphail, M.A.; James Fraser Macpherson, *James Donald Macrae, Colin M'Vicar, M.A.; William Mailor, Harry Banbury Mapleton, B.A.; Hezlitt Hamilton Marshall, William Robert Martine, Felix Oswald Newton Mill, James Morris Menzies, Sydney Messulam, Archibald Mitchell, William Mitchell, Keith Waldegrave Monserrat, Ernest Callen Moore, S. O. Morris, M.A.; R. S. Mowat, J. R. Muir, H. V. Munster, G. A. Murray, T. M. Mair, John Nicolson, F. R. Oliphant, D. Orr, C. W. Owen, A. A. Palmer, R. Parkhurst, J. A. Parsons, G. W. S. Paterson, T. B. Pearson, T. C. Penfold, A. P. Percival, J. M. Pereird, T. Pettey, C. E. Potter, D. R. Price, A. M. M. Pringle, F. G. Proudfoot, M.A.; E. de Carle Prout, P. M. Ragg, A. Reid, W. Riach, J. K. Richards, A. Richardson, W. H. Robertson, A. Rodger, L. Rose, M.A.; Hugh Ross, G. H. R. Harrison, J. M. Rutherford, James

* Indicates that the candidate has passed the Examination with distinction.

Scott, T. M. Scott, P. J. Sharp, G. Shaw, T. D. S. Shaw, T. R. S. Sibbald, C. M. Simpson, S. S. Skinner, B.A.; P. D. Smith, R. W. I. Smith, T. Smith, W. E. Smith, A. M. Stafford, J. G. Standing, * W. A. Stephen, M.A.; M. B. Steuart, Hugh Steven, W. L. Stevenson, * J. P. Stewart, M.A.; * W. S. Strapp. J. Struthers, F. W. Taylor, W. S. S. Titterton, M. L. M. Vaudin, G. D. Waal, J. S. H. Walker, J. W. T. Walker, F. T. Walmsley, F. Ward, J. Watson, E. C. Watts, E. T. Whitaker, A. Whytt, E. D. Williams, J. M. Wishart, J. J. N. Wood, H. M. Woodhead, R. J. T. Wright, M. A.; and G. P. Yule.

OBITUARY.

JOHN MACKINTOSH BALFOUR, M.B., M.R.C.P. EDIN.,

PRESTEIGNE, RADNORSHIRE.

THE intimation of Dr John M. Balfour's death in the *Scotsman* of June 21st caused the deepest regret to his numerous friends. The fourth son of Dr George W. Balfour, he was born in Edinburgh in May 1864, and commenced the study of medicine in the University at the age of 16. In a year which was remarkable for the number of its brilliant students, he rapidly earned for himself a reputation by carrying off the highest possible distinctions, and graduated with first-class honours when he had barely attained the age of 21. The estimation and regard in which he was held by his fellow students and graduates was shown by his election the same year to the Senior President's Chair of the Royal Medical Society. It was then, at what appeared to be the inauguration of a brilliant career, that his health necessitated a sojourn abroad, after which, on his return to Scotland, he elected to practise in the country, and in Moniaive, Dumfriesshire, his pre-eminent abilities gained for him, though so youthful in appearance, the confidence and regard of his patients, irrespective of class or rank, in a degree to which few practitioners ever attain. Unfortunately, his health again gave cause for anxiety; in the summer of 1891 he was laid up for several months with an affection of the kidneys, from which he never really recovered. He bore his long illness and the disappointments it brought him with uncomplaining fortitude. Being so far set up by a voyage to the West Indies, he was able to resume practice, this time in South Wales. Attacks of his malady recurred from time to time, in one of which his condition became serious, and his father was sent for. His end, however, had come, and he died suddenly, being conscious to the last.

John M. Balfour was a man of great individuality and force of character, yielding to none in enthusiasm for his profession. As a physician he gave evidence of great promise, always appreciating the scientific aspects of his cases, and conducting their treatment with very remarkable tact and judgment. What spare time he had was devoted to the elucidation of medical problems, and to the perfection of methods of clinical diagnosis. He will be chiefly remembered, however, by his patients for his kind and genial disposition, and his unselfish devotion to duty.

THE LATE DR BAIRSTOW.

We have to deplore the death of Dr Bairstow, 50 George Square, Edinburgh, from the effects of a chill caught when viewing the procession on the "Life-boat Saturday." Tom Bairstow was born in Halifax, and was left an orphan at an early age. His guardians sent him to Kirkham School, Manchester, to be educated, and afterwards indentured him to a chemist and druggist in that city, with whom he served the greater part of his apprenticeship. Disliking this business, he paid forfeit, and came to Edinburgh and began the study of medicine. He obtained the diplomas of the Royal Colleges of Physicians and Surgeons, Edinburgh, in 1883. For some time he acted as an assistant to Dr Leonard Keatly Yelf, Gloucestershire, with whom he formed a sincere friendship, which continued until death. On the invitation of the late Mr Urquhart, he subsequently returned to Edinburgh and undertook the duty of Superintendent of the department of Midwifery and Gynæcology in the Marshall Street Dispensary,—an appointment he retained for nearly two years, and where his untiring and ceaseless work amongst the poor in that neighbourhood laid the foundation of his successful career as a general practitioner in this city.

He was an able, painstaking, clear-headed, conscientious physician, and an expert obstetrician; kind and considerate to his patients, who in return greatly esteemed and respected him, as evidenced by the throng of mourners that surrounded his grave.

Dr Bairstow took an active interest in the Edinburgh Branch of the British Medical Association, and in the promotion and prosperity of the Edinburgh Yorkshire Association. His genial and social habits made him be beloved by a large circle of friends. At the time of his death he held the office of Surgeon to the Edinburgh High Constables, and was an elder in Lady Glenorchy's Parish Church.

He leaves a widow and two boys, the youngest only two months old.

CORRESPONDENCE.

(To the Editor of the Edinburgh Medical Journal.)

Sir,—At the recent discussion on Massage at the Edinburgh Medico-Chirurgical Society various opinions were advanced regarding the treatment of early tubercular joint disease by massage. As I think that the suggestion made by Prof. Chiene of rubbing away the tubercular disease may be productive of harm, I venture to submit my views on the subject in the form of this letter.

The sequence of ideas, or argument, which appeared in the course of the discussion seemed to me to be this,—as massage is undoubtedly of great good in the treatment of sprains, therefore it ought to be useful also in tubercular disease.

Now, Sir, I submit that a diseased joint cannot be treated on the same principles and by the same methods as an injured one, and what is good for a sprain is not necessarily good for a strumous joint. On the contrary, experience has taught us that tubercular joints improve when rested, and many (perhaps I should say most) get well if properly immobilized. Besides, do we not know that it is want of rest in the early stages of strumous disease that brings so many cases under the knife. In a sprain we have an injury to a ligament or synovial membrane, which causes a tear and some effusion. This is a very different thing from an inflammatory process affecting bone, synovial membrane, and all the other tissues entering into the formation of the joint more or less and sooner or later.

An effusion will be removed by Nature without any inflammatory process; and much better without it, because stasis is unfavourable to the process of absorption. One can see very well how massage will help Nature to remove such an effusion. Even when an inflammatory process has occurred, and effusions of a chronic character and adhesions have resulted, the benefits that may be derived from properly directed massage are evident. But in the case of tubercular disease of a joint there is something more than effusion, and something more even than an inflammatory process to be dealt with,—there are the bacilli.

Now, Sir, is there any way by which massage may benefit a tubercular joint in its contest with bacilli? I think that there are two ways. One was indicated by yourself at the above-mentioned discussion. Another was mentioned to me by my friend Dr J. H. A. Laing the other day in conversation. The one is massage of the atrophied muscles to promote their vascularity and nutrition; the other, massage of the whole limb for the same object in view.

I have had the opportunity lately on two occasions (in my papers on Excision of the Knee Joint, and on Bier's Method of Treating Tubercular Joint Affections by Congestion) of directing attention to the fact that limbs affected with tubercular joint disease are atrophied, and that this atrophy is associated with marked diminution in the size of the bloodvessels. In connexion with this I pointed out that Bier's congestion method might do good by increasing the amount of blood in the diseased tissues, and so enabling them to combat with and perhaps overcome the tubercle bacilli. I believe that in like manner massage, directed as indicated by yourself and Dr Laing, may benefit a strumous joint by bringing more healthy phagocytic blood to its rescue.

It seems to me, therefore, that when massage is used it ought to be directed towards nutrition of the affected limb as a whole, and of the atrophied muscles in particular. An important point, I think, in support of this is that not only do limbs atrophy as a whole in tubercular disease, but the atrophy tends to remain even after the diseased condition is recovered from, as witness many shrivelled and shrunken limbs.

I would draw the line at an inflammatory process in regard to massage as a rule. I would use it freely in simple injuries in which there is no inflammation, and for inflammatory *products*, but would withhold my hand when there is inflammation—acute and even chronic. In regard to joints, I would still like to adhere to the old rule,—injured joints must be moved to prevent anchylosis, inflamed joints must be rested,—and often with the same result, viz., anchylosis is prevented because an early cure results before adhesions have time to form or tissues to be destroyed.

This, it seems to me, is the safest position to take at present in regard to the employment of massage in tubercular joints, and is, I think, in accordance with our present knowledge of the pathology of that affection. A. G. Miller.

PUBLICATIONS RECEIVED.

Annual Report of the Sanitary Commissioner with the Government of India, 1892. Calcutta, 1894.

Prof. T. M'Call Anderson, M.D.,—A Treatise on Diseases of the Skin. Second Edition. Charles Griffin & Co., Limited, London, 1894.

James B. Ball, M.D. Lond., M.R.C.P.,—A Handbook of Diseases of the Nose and Pharynx. Second Edition. Baillière, Tindall, & Cox, London, 1894.

James Braithwaite, M.D. Lond.,—The Retrospect of Medicine. Vol. 109. Jan.-June 1894. Simpkin, Marshall, Hamilton, Kent, & Co., Limited, London.

Ralph Browne, L.R.C.P. Lond., etc.,—Neurasthenia and its Treatment by Hypodermic Transfusions. J. & A. Churchill, London, 1894.

Edinburgh Hospital Reports. Edited by Drs Gibson, Cathcart, John Thomson, and Berry Hart. Vol. II. Young J. Pentland, Edin. and Lond., 1894.

Eighty-first Annual Report of the Royal Edinburgh Asylum for the Insane for year 1893.

R. Bruce Ferguson, M.A., M.B., etc.,—Aids to the Mathematics of Hygiene. Baillière, Tindall, & Cox, London, 1894.

Ernest Hart, D.C.L.,—Essays on State Medicine: I. Compulsory Vaccination and Small-pox in Relation to Vaccination. Smith, Elder, & Co., London, 1894.

Ernest Hart, D.C.L.,—Essays on State Medicine: II. Compulsory Notification in England and Wales in 1892. Smith, Elder, & Co., London, 1894.

Ernest Hart, D.C.L.,—Essays on State Medicine: III. State Aid in Relation to Port Cholera. Smith, Elder, & Co., London, 1894.

F. G. Harvey, F.R.C.S. Ed.,—The Pharmacopœia of the Hospital for Diseases of the Throat. J. & A. Churchill, London, 1894.

George Herschell, M.D. Lond.,—Diagrams for recording Cases of Heart Disease. Baillière, Tindall, & Cox, London, 1894.

George Herschell, M.D. Lond.,—Clinical Diagrams, with Directions for recording Cases of Heart Disease. Baillière, Tindall, & Cox, London, 1894.

George Mackay, M.D., F.R.C.S.E.,—On Blinding of the Retina by Direct Sunlight. J. & A. Churchill, London, 1894.

Dr Carasso Giovani Michele,—Nuovo Metodo di Cura della Tubercolosi Polmonare. Rome, 1894.

Holger Mygind, M.D.,—Deaf-Mutism. F. J. Rebman, London, 1894.

Charles A. Parker,—Post-Nasal Growths. H. K. Lewis, London, 1894.

F. W. Pavy, M.D., LL.D., F.R.S.,—The Physiology of the Carbohydrates. J. & A. Churchill, London, 1894.

Richard Quain, Bart., M.D. Lond., LL.D. Ed., F.R.S.,—A Dictionary of Medicine. 2 vols. New Edition. Longmans, Green, & Co., London, 1894.

Third Annual Report (year 1893) to the County Council and District Committees of the County of Dunbarton. Wm. Hodge & Co., Glasgow, 1894.

Third Annual Report (year 1893) to the County Council and District Committees of the County of Stirling. Wm. Hodge & Co., Glasgow, 1894.

Transactions of the Fifteenth Annual Meeting of the American Laryngological Association held in May 1893. D. Appleton & Co., New York, 1894.

Transactions of the Obstetrical Society of London, Vol. xxxvi., Part I. London, 1894.

Westwood Wilson, M.D.,—The Pocket Companion of Dosimetric Medical Practice. Wertheimer, Lea, & Co., London, 1893.

Part First.

ORIGINAL COMMUNICATIONS.

I.—INTRODUCTION TO DISCUSSION ON MASSAGE—SURGICAL, MEDICAL, AND GYNECOLOGICAL.

By J. Halliday Croom, M.D., F.R.C.P. Ed., F.R.S.E., Physician to the Royal Maternity Hospital; Physician to, and Clinical Lecturer on Diseases of Women, Royal Infirmary; Lecturer on Midwifery and Diseases of Women, School of Medicine, Edinburgh.

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Mr President and Gentlemen,—My object in the following remarks is not to attempt any detailed account of massage and its accessories. This is a task which the twenty minutes placed at my disposal would be insufficient to overtake. All I desire to do is to make some general observations upon this method of treatment so far as my own limited experience is concerned, by way of initiating a discussion, so that the Society may hear the opinions of those who have a much greater right to speak on the subject than I have.

The subject you have selected for discussion is by no means a novel one, for in a primitive form it was known to both the Greeks and the Romans, by whom it was used especially after the bath. Homer, too, sings of beautiful women who, by rubbing, refreshed war-worn heroes after the toil and heat of the battle; and Hippocrates says that a physician must be experienced in many things, but especially in rubbing. The practice was known to the Chinese 3000 years B.C., and the Sandwich Islanders employed methods of treatment which were only massage carried out in a somewhat unscientific manner. Plutarch tells how Cæsar was cured of general neuralgia by being manipulated daily by a slave. It seems that the Greeks and Romans obtained their knowledge of mechanotherapy from the Hindoos and Chinese, and the celebrated maxim "Mens sana in corpore sano" comes to us from Democritus. With the Hindoos a method of treatment allied to massage goes by the name of "shampooing." In all the ancient systems some form of motion played the principal part, and now modern medicine recognises the good effects of massage in mental and physical development, and in the "prevention" and cure of disease. But I need not trouble you by any further reference to the ancient history of massage, which is, at best, of secondary interest at a meeting such as the present.

Massage is defined by Murrell as "a scientific mode of treating certain forms of disease by systematic manipulation." The word "massage" really means kneading; yet this is but one of the many movements employed. This process of kneading can be carried out when soft tissues such as muscles are manipulated, but when the part to be operated upon is bony or resistant, kneading is out of the question, and other methods are called into play.

It was long before physicians accepted this form of treatment, and it remained in the hands of mere quacks and uneducated persons. That day has happily long gone by, and the treatment has received the approval of the Faculty generally. Fortunately, there has grown up quite a large section of able men who devote themselves exclusively to this department of therapeutics, and who now specialise entirely in massage.

It seems to me that this is entirely as it ought to be, because the time required, and the personal attention involved, not to speak of the physical exertion, render it impossible, or nearly so, for the general practitioner to devote himself with success to any number of these cases.

In regard to surgical massage I am, of course, not in a position to offer any opinion whatever; but as to its efficacy in loosening stiffened joints and in causing absorption of chronic inflammatory deposits in sprains, in neuralgia and rheumatism, as well as in spinal weakness and various other affections of ligaments and joints, I think there can be but one opinion as to its value and importance. I would rather refer to it as it is recommended in medical and gynecological cases, and with regard to these there are four systems which are in common use, viz.:—

(1.) Simple massage, which consists in the systematic stimulation of individual groups of muscles by various movements and manipulations, especially effleurage, pétrissage, friction, and tapotement.

(2.) The so-called Weir Mitchell treatment, which is really a combination of seclusion, rest, electricity, overfeeding, and massage; or, as Playfair says, "a vicarious way of giving exercise to patients who cannot take it themselves."

(3.) The Swedish system of medical gymnastics embraces a great variety of manipulations and exercises, and is used in a large number of chronic diseases.

(4.) The Zander system is not, strictly speaking, a form of massage. Certain diseases are cured by mechanical exercises,—machines, some of which are most elaborately constructed, being employed for the purpose.

Beyond the following characteristic extract from an American author quoted by Murrell, I need not further refer to the last system:—

"From a big room on the second floor at No. 45 Randolph Street, above a wholesale grocery store and next to the apartments occupied by the Ethical Society, a noise comes forth all through the day which reminds the listener of the click of the looms in a cotton factory. If the person who hears the noise enters the room to investigate, a strange sight meets his gaze. A dozen machines, run by a steam-engine in one corner of the apartment, rattle and click in a monotonous way, and in the embrace of each is a human being, who is being shaken, kneaded, or rolled for the improvement of his health. There are several machines which have what can only be described as two rubber pads on the end of an iron stem extending out from them. These pads may be said to represent a human hand in motion, shaking horizontally, with about one hundred and fifty movements to the minute. The patient sits on a chair and places any portion of his body to the rubber pads. They take hold and shake with a vigorous, even motion, clutching the clothing, skin, and muscles like the hand of a living person."

As to the physiological effects of massage, these are by no means well understood. The art has been long practised; but to a large extent we can only theorise as to the physiological changes by which the good results are obtained.

Several observers have, however, made important and careful experiments, notably Gopadze and von Mosengeil. Gopadze, by experiments on four medical students, found that the effect of systematic massage for a week was to considerably improve the appetite, to increase the weight, and to increase the frequency and depth of respiration. The pulse became fuller and, as a rule, slower, while the body-temperature at first fell and rose again to normal. The surface temperature of the part massaged is raised even three or four degrees.

Prof. von Mosengeil, to whom we are indebted for placing the system on a scientific basis, also made a series of valuable experiments, and proved that massage promoted absorption by the lymphatics, so that in this way effusions and other morbid products are removed. He further proved that massage increases the contractility of the muscles on electrical stimulation. He found that a current which before had no effect readily set up a vigorous contraction of the muscle after a few minutes of massage.

Of its uses in medicine it would be difficult to say in what disease it has not been practised and for which its votaries have not claimed more or less success. For example, it has been used by some in cardiac and pulmonary affections, hysteria, dyspepsia, delirium, and even ague. So far as my own personal experience goes, I am conversant with medical massage only in three classes of cases—constipation, gall-stones, and neurasthenia. However, it is only due to massage to acknowledge gratefully the benefits I have myself derived from its use in rheumatism, and no one can doubt the good effects of this treatment in this and other diseases of the locomotory system.

With regard to constipation, which is so common and often so obstinate in women, I have seen many cases for the cure of which the Pharmacopœia has been ransacked in vain, but in which drugs when combined with the use of massage have, as far as one could judge, effected a cure. Those cases I have first of all treated by careful dieting, the administration of purgative medicines, and massage of the abdomen, directed especially along the line of the colon; and I have found that in the course of time the manipulation of the abdomen by a skilled masseuse, without the aid of drugs at all, was sufficient to effect a daily evacuation, while later still some cases were absolutely cured, the bowels requiring no form of stimulation whatever.

In using massage for constipation all forms of growths and adhesions must be carefully eliminated. Used in such cases it would be worse than useless; but if due to defective blood or bile supply, scybala, or imperfect nerve supply, massage is a most valuable remedy. Constipation is a most persistent enemy to the female sex, and in obstinate cases I have found no better mode of treatment than massage.

I have had occasion to observe benefit derived from massage in cases of catarrh of the bile ducts and atony of the gall-bladder. I am confident that with care very considerable benefit is to be derived from massage. I have on two occasions satisfied myself that calculi have been got rid of in this way, and the necessity for an operation has thus been avoided. I am not sure, however, that massage in these cases is altogether devoid of risk, for in one case I have seen a rather severe attack of peritonitis occur after the treatment had been completed.

I have seen, like many other physicians, many cases of "neurasthenia," especially cases which are supposed to owe their origin to some ovarian mischief. "Neurasthenia is a nervous weakness found especially among the rich and educated, and resulting from overwork, worry, loss of relatives, disappointed hopes, or as I have just indicated, as a sequel to some affection in some part of the system which, however, has nearly recovered, or at least ought to produce no effects on the general health."

The symptoms are a gradual but often alarming loss of weight; the patient becomes dull and listless, looks old and shrunken, and suffers from attacks of faintness and from coldness of the extremities, as well as from almost certain sickness and vomiting whenever food is administered. Those cases are allied to hysteria, but not always so. They are what Sir William Gull termed cases of "anorexia nervosa." No doubt, however, as the patients, as a rule, are weak nervous women who lack fat and blood, they are extremely apt to become hysterical. As Weir Mitchell says,—"A few are ennobled by long sickness, but far more often the result is to cultivate self-love and selfishness, and only too often one fatal element exists—the self-sacrificing love and sympathy of a relative or friend."

To Dr Playfair of London we are indebted in a very great measure for the introduction of the Weir Mitchell system into this country. The wonderful success which he obtained by the employment of this method has so popularised it that now there is scarcely a practitioner who has not given the treatment a more or less prolonged trial.

No man can be in practice for long without coming in contact with cases which Dr Weir Mitchell describes as suitable for this form of treatment. His words are:—"The cases which I have treated have been chiefly women of a class well known to every physician, nervous women who are thin and lack blood. Most of them have been such, and have passed through many hands and been treated in turn for gastric, spinal, or uterine troubles, but who remain at the end as at the beginning, unable to attend to the duties of life, a source alike of discomfort to themselves and anxiety to others."

As regards the treatment, the points insisted on are:—1. Seclusion (this, however, is not absolutely required in every case). 2. Rest. 3. Massage. 4. Electricity. 5. Dietary and Therapeutics.

The patient is first of all removed from her friends and her old surroundings in company with a skilled nurse, who must also be a masseuse. She is placed at rest, which in some cases is absolute, the patient being allowed to move not even a limb. This enforced rest has often a good mental effect. In other cases she is allowed to leave her bed for an hour or two every day and to recline on a couch instead. The patient is subjected to a course of electricity and massage, which are used once or twice a day as the cases may be, every muscle which can be reached being stimulated by the various manipulations. The last and one of the most important elements in the treatment consists in dietetics and therapeutics. For the first week the patient is allowed nothing but two quarts of skimmed milk daily, and on this, as a rule, she loses weight at about the rate of ½ lb. a day. Then a very light breakfast is allowed in addition, and after a day or two a mutton chop for mid-day dinner. By the end of twelve days three full meals daily are allowed, as well as three or four pints of milk, and along with this 2 oz. of extract of malt. Indeed, the patient is steadily overfed, while the ill effects are prevented by the continuous use of electricity and massage. If she is unaccustomed to stimulants, after a time whisky or champagne are allowed, and iron is also administered. Sooner or later attacks of dyspepsia come on, or the urine becomes loaded with urates, in which case the diet must be diminished in quantity and quality for a time.

I cannot enter further into the details of the method. I know some of the recorded results are nothing short of miraculous. How great a part each of the elements of this method plays in producing the desired result it is difficult to say. For instance, seclusion is not necessary in every case. It is mainly in the hysterical cases that seclusion is most urgently demanded.

As to the cases which have passed beyond the borderland of sanity, whether they should be secluded, or even have Weir Mitchell treatment at all, in the presence of the President I should not presume to offer an opinion. But apart from this point it is quite certain that the rest and feeding would in themselves be impracticable were it not for the massage, which, by passive movements, render digestion possible. I have said that in many of the recorded cases the cures have been wonderful, but what about the failures? The most successful seem to have been those which are most advanced and in whom emaciation is extreme.

As far as my own experience is concerned I confess to disappointment. I admit that only two of the cases that have come under my care have been very advanced ones. In both of them there was very marked improvement, but nothing of pronounced cure I have read of as obtained by others. In both cases I attributed the improvement rather to the force of argument and moral suasion than to either massage or electricity. In all the cases that I have had to deal with I admit there has been marked benefit, but the reports of many after leaving the Home have been unsatisfactory. The fault may be, probably is, mine, but such is the fact.

As regards massage in gynecology, it was first recommended by Cazeau in 1844, who advocated its use for atony of the uterus during parturition; and every one has, of course, seen good results from friction under such circumstances.

Norstrom, in 1876, reported a case in which by massage he had been successful in curing chronic metritis, endometritis, hæmorrhagica, and prolapsus vaginæ. In 1818 Asp published the results of seventy-two cases, embracing chronic metritis, ulcerations, oöphoritis, chronic catarrhal troubles, perimetritis and displacements of various kinds which he had treated successfully by massage.

A. Reeves Jackson of Chicago recommends it in cases of early metritis, and considers that in the later stages it is of no use. He uses three different methods—(1), Abdominal massage; (2), abdomino-vaginal massage; and (3), abdomino-rectal massage. The treatment has to be continued patiently for several months, the sound being introduced occasionally to determine whether a decrease in the size of the uterus is taking place. Jackson says the abdomino-vaginal method is the most efficacious. The uterus being grasped simultaneously from within and without, is firmly kneaded and moved up and down, backwards and forwards, in every possible direction.

The operation consists in introducing two fingers into the posterior fornix behind the cervix, so that the posterior surface of the uterus is reached. This is then raised as far as possible, while the fingers of the other hand grasp and knead the uterus through the abdominal walls. Sometimes the uterus is pressed against the walls of the pelvis laterally, or against the posterior surface of the symphysis pubis.

According to those who practise this form of gynecological treatment, there are scarcely any pelvic affections for which it is not useful and which it does not cure. Graham says that the two essentials for a pelvic masseur are that he should have clean hands and a pure heart.

While I do not for a moment deny that the use of massage externally may have good effects in hyperæmia of the ovaries and uterus, and while I believe in this way such affections as dysmenorrhœa and amenorrhœa may be temporarily modified, yet I confess it would require a very great deal of persuasion and a great deal more proof of its benefits and its superiority to other methods to warrant me in advising, far less practising, a manipulation which, on the face of it, ought to be repellant to every right-minded woman. It is said that it is better to endeavour to cure displacements by this method than by the use of pessaries, because, forsooth, the use of these passive little instruments are apt to concentrate a woman's mind too much on her genital organs; but might I venture to inquire which is more likely to concentrate a woman's mind upon this part of her organisation—a pessary whose presence, if not unknown, is at least unfelt, or the regular friction of her vagina and uterus for weeks or months with the fingers? The question, it seems to me, requires no answer.

But another obvious objection, if such be necessary, is that it is by no means free from danger, because in endeavouring to remove a chronic deposit in the pelvis or enlargement of the ovary, there is considerable risk of setting up either acute inflammation or producing an hæmatocele or hæmatoma. But further, it has been recommended for the cure of pyosalpinx by kneading the pus along the tube into the uterus. Any one who has worked with the uterine annexa knows perfectly well that in cases of purulent tubal distention the uterine end of the tube is, in the great majority of cases, impermeable, and that massage is therefore not only useless but dangerous, inasmuch as the tube may rupture in the process, with most disastrous results.

I, for one, cannot sanction internal pelvic massage, not only because it is obviously a very undesirable and indelicate manipulation in itself, but because it has not been shown to have the slightest advantage over any of the ordinarily recognised methods of treating gynecological disease, and is by no means free from danger.

In what I have just said I refer entirely to internal massage, whether rectal or vaginal, for from external massage of the abdomen and rest, combined with other adjuncts, such as hot irrigation, I have seen the very best effects.

I fear, sir, that in selecting me to open this discussion you have failed to secure a very enthusiastic admirer of the method, and, what is still worse, one who has had comparatively little success with it, especially in his own department of medicine. All I can say is, that I have endeavoured to put the matter before you as shortly as my time will permit, and, so far as my work is concerned, I have only stated the facts as they stand.

II.—THE DIGESTION OF SUGARS IN HEALTH.

By W. G. Aitchison Robertson, M.D., D.Sc., F.R.C.P.E.

It is only within the last century that the consumption of cane sugar has become general; until a comparatively recent period its expense limited its use to the wealthy, while to the poor it was almost unknown. When a sweetening agent was desired, honey was commonly employed, and nearly every cottager kept his beehive, a custom which has now fallen into desuetude. As the price of cane sugar has fallen, so has its consumption increased. According to M'Culloch, the amount consumed in Great Britain in 1700 was 10,000 tons. In 1790 it reached 81,000 tons; although in 1808 the duty had risen to 27s. per cwt., 142,000 tons were used; while in 1864 there were imported 551,105 tons, a quantity equal to 30 lbs. per head. In 1891 the home consumption of raw and refined sugars was 1,352,676 tons, which is equivalent to an annual consumption of 80 lbs. per head.

Great Britain and America are the largest consumers of sugar. In other countries, as France, where the duty is higher, the consumption is proportionally less.

An article of diet so largely consumed merits as much attention from the physiologist and scientific physician as it has already received from the chemist.

The large employment of sugar in these times is no doubt a very important factor in the causation of dyspepsia. Our ancestors were much less troubled with indigestion than the present race, and the increase of this malady is commonly ascribed to increased civilisation and to the multiplication of sedentary occupations. Perhaps there is some truth in these ideas, but I have not found this disease more common among our hard brain workers than amongst our manual labourers. I believe the prevalence of indigestion mainly arises from the greater complexity of the diet now used, compared with the plain fare formerly consumed. Many dyspeptics have at an early period of their trouble to abandon saccharine foods, since they, soon after ingestion, cause much acidity, nausea, and heartburn. Why should this be so? Is cane sugar in itself so difficult of digestion, or is it because of its proneness to fermentative change that gastric disturbance is apt to arise? In what form is sugar absorbed into the blood? Is it as cane sugar, or is it as dextrose, lævulose, or maltose? How is cane sugar changed in digestion, and in what form is it absorbed? These are the questions I shall endeavour to answer.

CHEMISTRY OF SUGARS.

1. *Cane Sugar.*—Let me briefly summarize some facts regarding the chemistry of sugars. When a solution of cane sugar or saccharose ($C_{12}H_{22}O_{11}$) is heated for a long time by itself, or for a short time in the presence of dilute mineral acid, it becomes "inverted." When yeast is added to a warm solution and a moderate temperature maintained, the cane sugar becomes first inverted and then suffers alcoholic fermentation. A solution of cane sugar is dextro-rotatory; after inversion, however, the solution rotates the polarized ray to the left. During inversion cane sugar takes up a molecule of water, and then splits into equal parts of dextrose and lævulose. Petit maintains that these do not occur in equal proportions; while Maumené believes that, in addition to these, inversion gives rise to other optically neutral bodies, and that the products are much more numerous than is generally believed.

The mineral acids are much more powerful and rapid in their inverting action than organic acids; and of the inorganic, sulphuric acid is the most potent of all. The rapidity of inversion increases with the temperature to which the mixture of acid and sugar is raised.

2. *Dextrose,* glucose or grape sugar, is a crystallizable sugar. It is not so sweet as cane sugar, and is much less soluble in water. It rotates the plane of polarized light to the right.

3. *Lævulose,* or fructose, on the other hand, is a colourless syrup as sweet as cane sugar. It has also been obtained in colourless acicular crystals. It turns the plane of polarization to the left, but its specific rotatory power is far greater than that of glucose, and hence, even though these two sugars may exist in equal amounts in invert sugar, the plane of polarization lies to the left.

The suboxide of copper is not precipitated from an alkaline solution of tartrate of copper by boiling with a solution of pure cane sugar, unless the ebullition be carried on for a long time; but if invert sugar be used, the copper oxide is at once reduced.

I. DIGESTION OF CANE SUGAR.

Action of Saliva on Cane Sugar.

It has been affirmed by some writers that saliva has an inversive action on cane sugar, while this is denied by others. I have sought to determine this point.

I have already stated that when a solution of cane sugar is heated alone it undergoes a slow inversion. To estimate the amount of this inversion I kept a 20 per cent. solution of pure cane sugar in a water-bath at a constant temperature of 38° C.

This solution was made by dissolving 200 grammes of pure dry cane sugar in distilled water and diluting to one litre. After being kept at this temperature for one hour, invert sugar amounting to 0·19 per cent. was produced. At the end of two hours this had increased to 0·252 per cent. This constitutes the control experiment, and shows the amount of inversion which a 20 per cent. solution of cane sugar undergoes after one and two hours' exposure to the normal temperature of the body.

To determine whether saliva had a greater inversive action on cane sugar than distilled water, I performed the following experiment:—

Equal volumes of human saliva and cane sugar solution (of strength equal to 40 per cent.) were mixed together to give a 20 per cent. solution of sugar. Several beakers containing this solution were placed in the water bath at 38° C. After thirty minutes no recognisable inversion had occurred. In forty-five minutes traces of invert sugar appeared, as shown by the reduction of copper oxide, and in one hour the invert sugar amounted to 0·2 per cent.; while in two hours it reached 0·27 per cent.

I. Cane Sugar, 20 per cent. at 38° C.	Invert Sugar.	
	In one hour.	In two hours.
1. Solution in distilled water, .	0·19%	0·252%
2. „ „ saliva, ...	0·2	0·27
Difference, ...	·01	·018

The amount of inversion in presence of saliva is so nearly the same as in its absence, that we may safely conclude that normal human saliva has practically no influence in hastening or retarding the inversion of cane sugar. In fact, it seems to be perfectly passive in this respect. The results given in the above experiment were practically identical with those obtained in other experiments conducted on similar lines.

II. GASTRIC DIGESTION OF CANE SUGAR.

Cane sugar reaches the stomach unchanged. Does it undergo any digestion in this organ, or does it require any?

It is thought by some that cane sugar is absorbed unchanged, and that after its entrance into the portal vessels it is transformed into glucose through the agency of a ferment in the blood. Pavy is of opinion that it does not require to be changed by digestion to aid its absorption, but merely requires solution to enable it to pass into the bloodvessels. He is inclined to believe, however, that, as a matter of fact, it is at all events partially converted into grape sugar before absorption from the alimentary canal. Bouchardat and Sandras state that, under the influence of the gastric juice and of the lining membranes, cane sugar is changed into invert sugar and lactic acid, and absorbed as such, and that it must undergo inversion before it can be absorbed and used up in the blood.

The gastric juice contains, besides pepsin, a milk-curdling ferment; and, according to Hammersten, there is also a lactic acid ferment that acts on milk sugar. But in opposition to this last statement, it is a fact that a pure solution of lactose does not undergo fermentation when acted on by the gastric juice.

The acidity of the gastric secretion is now universally believed to be due to free hydrochloric acid (as was first conclusively proved by Bidder and Schmidt), which amounts usually to 0·17 to 0·3 per cent. During the first stage of digestion, even though the contents of the stomach are acid, no free hydrochloric acid is found. The period when it appears varies in different individuals, and also varies with the diet. After breakfast it may not be found until 45–60 minutes have elapsed, while after a full dinner it is not evident until after the lapse of two hours.

Lactic acid is said by some to exist normally in gastric juice, though it never reaches an amount exceeding 1 per mille. Free hydrochloric or lactic acid can seldom be detected in the stomach of infants.

Of the total acidity which one estimates in the gastric juice during digestion, only a very small amount may be due to free hydrochloric acid, the greater part being caused by the presence of acetic, butyric, and lactic acids.

Action of Gastric Secretion on Cane Sugar.

Dalton, Leube, and others state that outside the body the gastric juice slowly changes cane sugar into glucose. Laborde, however, affirms that the inversive power of the gastric juice is less than that of a solution of hydrochloric acid of the same strength; but if a trace of hydrochloric acid be added to the gastric juice, its inversive power becomes greater than that of the dilute solution of hydrochloric acid alone. Leube makes an exactly opposite statement. Brown-Séquard, Schiff, and Smith say that cane sugar is inverted in the stomach, and Bourquelot thinks that it is partly inverted in the stomach, but that part passes directly into the blood and is there inverted by the carbonic acid. Hay could find no inversive ferment in the gastric mucous membrane. Frerichs states that cane sugar is not inverted even if left in the gastric juice for twelve to thirty-six hours; and Blondlot believes that the sugar undergoes no change while in the stomach. Richet found that unless he added hydrochloric acid to gastric juice, there was no inversion of cane sugar; and asserts, in explanation of this, that there is really no free hydrochloric acid in the gastric juice, but that it is always combined with organic bodies. He states that under normal conditions the gastric juice in the stomach does not act on sugars.

According to Dalton, it cannot be shown that cane sugar undergoes any inversion during ordinary digestion, and that if taken along with other food there is probably no conversion of it into glucose in the stomach. Kühne and Hermann make similar statements, and Leube comes to the same conclusion. In the healthy stomach, he says, no inversion of cane sugar occurs; but if there be dilatation, then there is a considerable amount of inversion.

Inversion of Cane Sugar by Dilute Hydrochloric Acid.

To estimate the amount of inversion caused by a dilute acid in a solution of cane sugar, I performed the following experiments:—

To 100 c.c. of a 20 per cent. solution of cane sugar I added 0·2 c.c. of hydrochloric acid, and placed it in a water-bath at 38° C. After the lapse of one hour it was removed, and was found to contain 0·37 per cent. of invert sugar. After being heated thus for two hours, the invert sugar had increased to 0·45 per cent. Subtracting the amount of sugar which is inverted when the 20 per cent. cane sugar solution is heated alone, we find that after one hour the hydrochloric acid has caused an increased inversion of 0·18 per cent., and after two hours 0·198 per cent., or nearly $\frac{1}{5}$th per cent. more.

Cane Sugar, 20 per cent. solution, at 38° C.	Invert Sugar.	
	In one hour.	In two hours.
1. Alone, ...	0·19 per cent.	0·252 per cent.
2. With 0·2 per cent. HCl,	0·37 „ „	0·45 „ „

This comparison shows that the presence of the acid in the solution of cane sugar nearly doubles the amount of invert sugar produced. At the end of two hours, only about $\frac{1}{40}$th part of the cane sugar had undergone inversion in the presence of acid similar in amount to that of the gastric juice and at the temperature of the stomach.

Inversion of Cane Sugar by Gastric Secretion.

I then continued the experiment with the gastric secretion from a man with a perfectly normal digestion. At 8 A.M. he had breakfast of porridge and milk. At 10 A.M. I washed out his stomach thoroughly, and then injected three ounces of dilute *Liquor Carnis*

(*Caffyn*). (This extract has no reducing action on the alkaline solution of copper.) Introducing the stomach-tube one hour later, I drew off the gastric contents, and used this, after filtration, in the same way as I had formerly used the 0·2 per cent. solution of hydrochloric acid. The initial acidity of this fluid, estimated as free hydrochloric acid, amounted to 0·15 per cent. Into a vessel I placed 10 c. c. of each of the following, viz., the gastric fluid, water, and 20 per cent. solution of cane sugar. The acidity of this mixture was 0·05 per cent. hydrochloric acid, and the sugar in this mixture was reduced by the dilution to about 6·6 per cent. After having been kept for two hours at a temperature of 38° C., it contained 0·83 per cent. of invert sugar.

$$\left.\begin{array}{l}\text{10 c. c. healthy gastric fluid}\\ \text{10 c. c. water}\\ \text{10 c. c. 20 p. c. cane sugar solution}\end{array}\right\} = \begin{array}{c}\text{0·05 p. c.}\\ \text{HCl}\end{array} = \left\{\begin{array}{c}\text{Invert sugar after}\\ \text{2 hours—}\\ \text{0·83 p. c.}\end{array}\right.$$

To determine whether the gastric juice had a greater or less effect in inverting cane sugar than a pure acid solution of similar strength, I made a solution of hydrochloric acid of strength equal to that of this gastric fluid which I had just employed, and used it in place of the gastric secretion in a similar experiment. After being kept at a temperature of 38° C. for two hours, the invert sugar in the mixture amounted to 0·66 per cent.

$$\left.\begin{array}{l}\text{10 c. c. solution of HCl} = \text{0·15 p. c.}\\ \text{10 c. c. water}\\ \text{10 c. c. 20 p. c. cane sugar solution}\end{array}\right\} = \begin{array}{c}\text{0·05 p. c.}\\ \text{HCl}\end{array} = \left\{\begin{array}{c}\text{Invert sugar after}\\ \text{2 hours—}\\ \text{0·66 p. c.}\end{array}\right.$$

The amount of invert sugar formed in the latter experiment being only 0·66 per cent., as compared with 0·83 per cent. when diluted gastric juice was used, seems to demonstrate that healthy gastric juice has a greater inverting power than a solution of hydrochloric acid of similar strength, and thus corroborates Leube's statement that sugar inversion is less rapid and less energetic with a pure acid solution than with gastric juice, but is opposed to what Laborde affirms, that the inverting power of gastric juice is less than that of hydrochloric acid diluted to the same degree of acidity.

It has been definitely stated that there is a sugar-inverting ferment in the gastric secretion. To determine whether the inversive action of the acid is aided by such a ferment, I proceeded as follows:—

I mixed equal volumes of healthy gastric fluid, water, and 20 per cent. solution of cane sugar, and then carefully neutralized the acidity with potassium hydrate. I used specially prepared and very sensitive litmus paper to test the reaction. After keeping the mixture at 38° C. for one hour, there was no trace of invert sugar; after two hours, a faint trace of invert sugar had appeared, but too minute for quantitative estimation.

10 c. c. healthy gastric fluid	Carefully neutralized	Invert sugar after 2 hours—mere trace.
10 c. c. water		
10 c. c. 20 p. c. solution of cane sugar		

Therefore, when the acidity of gastric juice is neutralized no inversion of cane sugar occurs. I conclude that there is practically no sugar-inverting ferment in gastric juice, otherwise an appreciable amount of invert sugar would have been formed in the above mentioned experiment.

It is evident from these experiments that the acidity of the gastric juice is the only factor in causing inversion of cane sugar.

The preceding experiments were performed in the laboratory with fresh human gastric juice. I desired to investigate the changes, if any, which cane sugar undergoes *in the stomach*. I experimented on a healthy man by the following method:—At 8 A.M. he had breakfast of porridge and milk. Two hours later I washed out his stomach thoroughly by means of a syphon elastic tube, and then poured 250 c. c. of a warm 20 per cent. solution of pure cane sugar into the stomach, the patient being thus quite ignorant of the nature of the fluid which was introduced. At intervals of from half an hour to two hours after the injection I passed the stomach tube and removed some of the gastric contents. Each sample of the gastric fluid so obtained was measured and filtered, and the reducing sugar in it estimated by Fehling's solution. The total acidity was estimated by titration with a centinormal solution of caustic soda, and expressed in terms of anhydrous hydrochloric acid. I did not estimate the amount of free hydrochloric acid, as it was unnecessary, but I always tested for the presence of inorganic (of which hydrochloric is the chief) and organic acids qualitatively.

Having estimated the acidity and the amount of invert sugar present, I then inverted the unchanged cane sugar in a definite amount of the gastric fluid by heating it for two hours with a few drops of dilute sulphuric acid (1 c. c. ordinary acid to 9 c. c. water). At the end of this time, any cane sugar present in the fluid had undergone complete inversion.

Normal Healthy Gastric Digestion.

In the first place, it was necessary to investigate the general character of this healthy man's gastric secretion; so, after washing out his stomach, he was allowed to eat quickly 250 c. c. of cooked minced steak.

(1.) One hour later, 60 c. c. of muddy dark brownish-red fluid were drawn off. This contained much swollen and softened muscular tissue; fat in very small masses; total acidity was equal to 0·211 per cent. hydrochloric acid; inorganic acids were present, and a large quantity of organic acid; peptones were present in large amount, and fibrin soon dissolved in it on adding a trace of hydrochloric acid.

(2.) After two hours, 35 c. c. of turbid brown fluid were drawn off. The muscular tissue was further broken down, and fat occurred in larger masses; the total acidity was equal to 0·185 per cent. hydrochloric acid; inorganic acid was present in large amount, and organic acid also. The peptone reaction was hardly so marked as in the first case, and fibrin, as before, was quickly dissolved.

As another control experiment, I washed out this healthy man's stomach and then injected 250 c. c. of normal saline solution (= 0·7 per cent. Na Cl.)

(1.) After one hour I drew off 140 c. c. slightly turbid fluid. Total acidity was equal to 0·075 per cent. hydrochloric acid; inorganic acids were alone present. Polariscope gave —1°·2. It contained no substance that had any reducing effect on Fehling's solution. After acidifying this fluid and heating it in a water-bath for two hours there was no chemical change.

(2.) After two hours 60 c. c. were drawn off. The acidity was equal to 0·178 per cent. hydrochloric acid; inorganic acids were alone present; the polariscope showed —0°·7, and the fluid contained no reducing substance.

In this case the polariscope shows a rotation of the polarized ray to the left, although no sugar was present. All proteids are lævo-rotatory, and there are peptones in the gastric fluid after injecting saline solution.

This, then, is the character of the gastric fluid with which we have to deal in the case of this healthy digestion.

Normal Gastric Digestion of Cane Sugar.

In each experiment 250 c. c. of 20 per cent. cane sugar solution were injected into the empty stomach, and samples of this were drawn off at varying intervals. The following Table gives the results of these observations:—

Series.	Time during which Cane Sugar was in Stomach. Minutes.	Number of Cubic Centimetres drawn off.	Total Acidity as HCl per cent.	Presence of Inorganic Acids.	Presence of Organic Acids.	Per cent. of Invert Sugar formed in Stomach.	Total Amount of Reducing Sugar when Inverted outside.	Remarks.
I.	30	160	0·09	+	+	0·25	2·44	No lactic acid.
II.	60	36·5	0·124	+	+	0·81	1·28	Trace of lactic acid.
III.	60	90	0·115	+	+	0·42	1·7	Trace of lactic acid.
IV.	90	40	0·125	+	+	0·13	0·495	...
V.	120	41	0·1428	++	+	0·68	0·934	Trace of lactic acid.
VI.	120	85	0·185	++	+	0·41	0·65	No lactic acid.

These experiments show—

1. That inversion of cane sugar really takes place in the healthy stomach.

2. That as digestion proceeds the proportion of invert sugar to the whole sugar increases.
3. That the amount of invert sugar formed is proportional to the acidity of the gastric juice.
4. That the total amount of sugar diminishes as digestion proceeds.

III. NORMAL GASTRIC DIGESTION OF INVERT SUGAR.

I prepared the invert sugar in the following manner:—One litre of the 20 per cent. solution of pure dry cane sugar was placed in a flask, and to it was added one cubic centimetre of dilute sulphuric acid (1 c. c. ordinary commercial acid to 9 c. c. water). The flask was then placed in a water-bath, and heated for two hours at a temperature of 170°–180° F. After allowing it to cool, it was made up to its original volume by adding water. This 20 per cent. solution of invert sugar gives a rotation of —10° by the polariscope of Zeiss.

I proceeded to experiment with this in the same way as I had done with the cane sugar solution, introducing 250 c. c. of the 20 per cent. solution of invert sugar into the previously emptied stomach, and passing the syphon tube after an interval of one and two hours, and withdrawing some of the gastric contents.

Digestion of Invert Sugar in the Healthy Stomach.

Series.	Numbers of c. c. withdrawn after being 1 or 2 hours in Stomach.		Total acidity as per cent. HCl.		Per cent. Invert Sugar remaining in fluid withdrawn.		Remarks.
	1 hour.	2 hours.	1 hour.	2 hours.	1 hour.	2 hours.	
I.	100	24	0·176	·1276	1·8	1·25	
II.	100	0	0·172	0	2·77	0	Stomach empty at second hour.
III.	100	66	0·229	0·164	2·27	0·44	No lactic acid, but other acids present.
IV.	120	11	0·182	0·175	3·3	0	No lactic acid.
V.	75	0	0·156	0	4·5	0	No lactic acid. Stomach empty at second hour.

If we compare this table with that of the digestion of cane sugar, we see that there is a very great difference as regards the behaviour of these two sugars in the stomach.

First, As regards the quantity of fluid in the stomach. In the case of cane sugar there was always much fluid in the stomach, even after the lapse of two hours. In no case was it less than 86 c. c. It is very different with invert sugar, however. When it was injected much fluid could be withdrawn up to the end of the first hour, but after two hours the stomach was entirely or almost empty, as only in one or two cases could a few cubic centimetres be extracted. The stomach therefore becomes quickly emptied of invert sugar.

Second, If we compare the columns in the table after one and two hours, we see what a reduction has taken place in the amount of sugar. What has become of this invert sugar? It must either have been rapidly absorbed through the walls of the stomach, or have been passed on through the pylorus into the duodenum. Probably both of these processes go on at the same time.

IV. Intestinal Digestion of Cane Sugar.

Neither the biliary nor the pancreatic secretions seem to have any inversive action on cane sugar. Béchamp thought that the pancreas had a slight inversive action, but the change which he saw was in all probability due to bacteria causing decomposition, and not to any ferment.

The mucous membrane of the small intestine, however, secretes a ferment which has been named "invertin," and which causes cane sugar to become hydrated and split up into glucose and lævulose. This fermentative action of the succus entericus was first described by Claud Bernard. The ferment can be isolated, and then acts on cane sugar, but much more slowly than when in contact with the mucous membrane of the small intestine. Bernard found that it was present in every part of the small, but not in the large intestine. Sir William Roberts also describes this ferment, and has extracted it from the small intestine of the pig, fowl, and hare. It will not, he finds, pass through a filter, and its inversive action is very slow, usually requiring two hours at 38° C. before any reduction of copper takes place. Hoppe-Seyler does not think that this is a true ferment of the intestinal mucous membrane, but believes that it is one introduced from without, and Busch could not find that cane sugar underwent any change during its stay in the bowels. Hay, however, found this ferment constantly present in every part of the small intestine of the fœtus, and in such a case it could not have been introduced from without. Demant has also described this *invertin* ferment, and also a diastatic one in the small intestine, but he finds that they require to act on the sugar or starch for four or five hours before any inversion of sugar or conversion of starch occurs. Brown and Heron have also studied this question, and find that a watery infusion of the small intestine possessed no inversive action on cane sugar, but when they used the dried and powdered mucous membrane of the small intestine they found a marked inversion. They say that this property lies chiefly in the agminated glands of the small intestine.

To observe for myself whether this inversive ferment was active, and in what localities it was to be found, I made the following experiments:—

A healthy young rabbit was starved for thirty-six hours. It then received a full meal, and was killed two hours subsequently, so that the various digestive processes might then be in full activity. I had previously prepared a 5 per cent. solution of pure cane sugar, and having placed 50 c. c. into separate flasks, I heated all to 38° C. Having carefully but gently washed the contents from the alimentary canal of the animal with a stream of normal salt solution, I then placed 5 grammes of different parts of the intestinal tract and other organs into separate flasks containing the sugar solution, and kept them at 38° C. for two hours. They were then allowed to cool, and the amount of inversion (if any) which had taken place estimated. The following Table shows what tissues were employed, and is arranged in the order of greatest inversive power of the tissues.

Rabbit: 5 grms. each of—	Per cent. Invert Sugar formed.
1. Lower part of small intestine, .	1·14
2. Upper part of small intestine, .	·961
3. Vermiform appendix, lower part, .	·362
4. Liver, ...	·297
5. Vermiform appendix, upper part, .	·233
6. Central part of stomach, . .	·233
7. Pancreas, ...	·217
8. Large intestine, ...	·148
9. Cardiac end of stomach, . .	·144
10. Pyloric end of stomach, . .	·143
11. Spleen, ...	·133
12. Thyroid, ...	·084
13. Salivary glands, ...	·068
14. Muscle, ...	·065
15. Kidney, ...	·062
16. Œsophagus, ...	·061
17. Bile, ...	0

This certainly shows that there is a very decided inversive action in the small intestine of the rabbit, and also an action to a very much smaller extent with the other parts of the digestive tract.

I then performed exactly the same experiments with tissues of an infant which had lived three days, and had been fed on the breast during this period. The salivary glands were too small to be worth while removing. The following Table is also arranged in the order of the greatest inversive power of the tissues.

Infant: 5 grms. each of—	Per cent. Invert Sugar formed.
1. Small intestine, ...	·543
2. Large intestine, ...	·384
3. Stomach, central part, . . .	·032
4. Œsophagus, ...	·012
5. Stomach, pyloric end, . . .	0
6. Stomach, cardiac end, . . .	0
7. Pancreas, ...	0
8. Liver, ...	0
9. Thyroid, ...	0
10. Kidney, ...	0
11. Bile, ...	0
12. Thymus, ...	0
13. Spleen, ...	0

A comparison of these two tables shows that the chief inversive action, both in the infant and in the rabbit, lies in the small intestine. It is a relatively powerful ferment, and, distributed as it is throughout the whole extent of the small intestine, will easily suffice to invert all the assimilable cane sugar which is ingested.

Recapitulating, therefore, we have seen that cane sugar is—

1. Unchanged by saliva.
2. Inverted to a certain small extent in the stomach, depending entirely on the degree and nature of the acidity of gastric fluid.
3. Inverted completely in the small intestine by the action of the ferment "invertin."

III.—ON EXTRA-UTERINE GESTATION SIMULATING RETROVERSION OF THE GRAVID UTERUS.

By A. H. Freeland Barbour, M.D.

(*Read before the Obstetrical Society of Edinburgh*, *9th May* 1894.)

Some years ago I brought before the Obstetrical Society a case of extra-uterine gestation which simulated a retroversion of the pregnant uterus. The frozen section which I laid before the Society showed how certainty in diagnosis from physical signs was during life impossible.

A case of a similar nature came under my observation last summer in Ward 28. I have to thank Dr Halliday Croom and

Dr Ferguson for particulars of the history of the case before it came under my notice; and my assistant, Dr Walker, for valuable work upon the frozen sections.

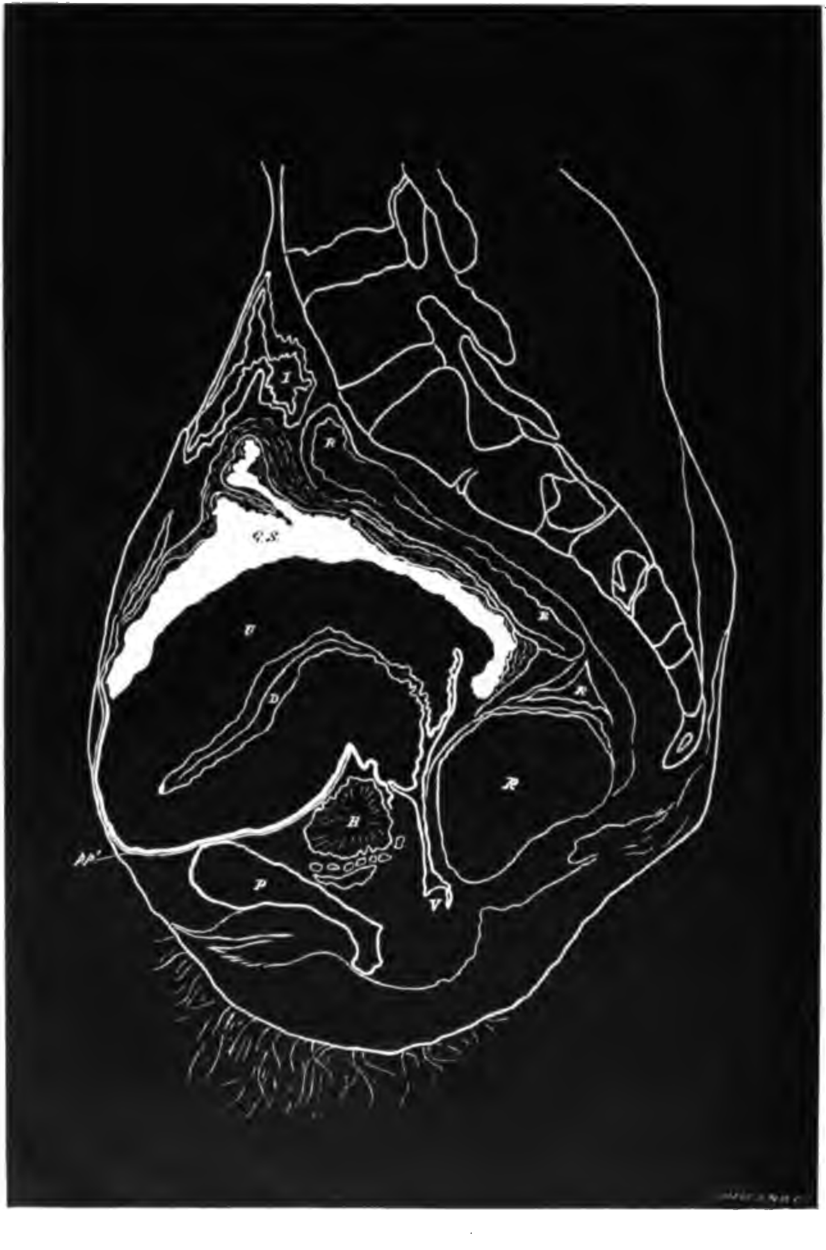
In this paper I confine myself to the clinical aspects of the case —looking at the frozen sections only in relation to diagnosis. Dr Walker is still working at the pathological anatomy of the case, and will communicate his results in another paper.

Dr Ferguson of Perth told me he first saw the patient on the 14th March of last year, when she was complaining of some pelvic pain and difficulty in passing water,—not amounting to retention nor requiring the catheter. She said that she had menstruated in the last week of December; and on the 21st of January had pelvic pain on walking, "as if she had racked herself." She had to stop and lay her hand on her side, but did not give up her daily work. On March 17th he examined her, and found a swelling in the posterior fornix, continuous with the cervix, which he supposed to be a retroflexed gravid fundus. He pushed it up, and put in a pessary. He was sent for shortly after this, and found her with symptoms of collapse, and removed the pessary. He attended her up to March 31st, when she was practically well again. On May 2nd and 7th he was sent for to draw off the urine, and learned that on May 1st there had been a slight hæmorrhage from the uterus, the first since the end of December. On May 10th she was sent to Edinburgh, and was in Ward 28 for some weeks.

I did not see her at this time; and Dr Halliday Croom says the condition found exactly corresponded to retroversion of the gravid uterus. The cervix was high up above the pubes; and behind, the pelvis was filled with a cystic mass, in which the fœtal head was felt. As the swelling could not be pushed up, and there were no symptoms calling for interference with pregnancy, the patient went home.

Dr Ferguson was sent for on August 16th, some time after her return from Edinburgh, and found her complaining of severe pain in the abdomen, with great tenderness and a temperature of 104°. Next morning the temperature had fallen to 100°, the pain was relieved, no fœtal heart was heard, and an attack of diarrhœa had set in. Her condition had improved by the 21st of August, so that she was able to stand the journey to Edinburgh Infirmary.

When I saw her on admission I found a tumour extending to the umbilicus, with an irregular outline,—the central part being more prominent and of varying consistence. The form and consistence of the walls of the sac recalled the case which I had laid before the Society previously, although the tumour extended higher up in the abdomen. The condition per vaginam (vagina flattened against pubes, cervix above reach) was exactly like that found in retroversion of the gravid uterus, and in the former case of extra-uterine gestation; but the palpation of the tumour through the abdomen showed that the tumour was not the gravid



Frozen Section of Pelvis with Extra-uterine Gestation.

U, Uterus ; *D*, Decidua ; *G. S*, Gestation Sac ; *R*, Rectum ; *I*, Intestines ; *B*, Bladder ; *P*, Pubes.

uterus. And in this case one could recognise (what was not present in the former case) an irregularity in the surface of the tumour, anterior and in the middle line, which at intervals became more prominent and firmer in consistence. From these characters it was diagnosed as the empty uterus incorporated with the front wall of the gestation sac.

She was in a very bad state for operation,—almost moribund, but it seemed her only chance. After consultation with Prof. Simpson (who kindly assisted me in the operation), abdominal section was done.

Operation.—The *peritoneal cavity* was opened into in the middle line, and contained a considerable quantity of very fœtid fluid,—suggestive rather of the post-mortem than the operating-room. The uterus was seen pushed to the right of the middle line by a swelling behind it. A layer of tissue, apparently continuous with the fundus, extended from it upwards, where it was lost, becoming adherent to the bowels. It ended at the left of the uterus in a free border, past which was seen a bluish swelling, recalling a thin-walled ovarian tumour whose pedicle has been twisted. This was incised, and the fingers passed into a mass of blood-clot, in the heart of which was a fœtus of between the sixth and seventh month. It had apparently been dead some time, as the cord had separated. It was in a state of advanced decomposition.

The sac was cleared out (the placenta, which was on the posterior wall of the uterus, coming away in pieces), then washed out, and stitched to the abdominal wall. A very fœtid discharge now came away from the uterus per vaginam, so that it was thought desirable to wash out the uterine cavity thoroughly.

From the condition of the operation, it was evident that there was little hope of her recovery; and she died.

Remarks.—To ascertain exactly the topographical relations of the gestation sac, it was removed with the pelvis, and the whole frozen.

Dr Walker's drawings enable us to follow the relations of the sac to the uterus and the pelvic contents generally. The sections made were—Vertical mesial, left lateral sagittal, and two right lateral sagittal. The right lateral sagittal, running about ¾ inch from the middle line, shows best the relations of the sac to the uterus; and our drawing is a reduced reproduction of it. (See Plate.)

I. *Right Lateral Sagittal Section.*

The *uterus* (*U*) being displaced to the right of the middle line, is here divided in its whole extent. Its cavity is 4 inches long, the walls being from ¾ to 1 inch in thickness. It contains remains of decidua (*D*).

The *bladder* (*B*)—lying chiefly to the left of the middle line—is cut through at its right corner, the ureter being divided in its wall.

The *rectum* (*R, R*) is seen throughout almost its whole extent; it lies, therefore, entirely to the right of the mesial plane.

The collapsed *gestation sac* (*G. S.*) appears in section as tri-radiate —one limb extending downwards in the position of the pouch of Douglas, coming into relation with the posterior vaginal wall for ½ inch, the second limb passing upwards among the intestines, the third forwards towards the fundus. The *sac wall* is intimately incorporated with the posterior wall of the uterus.

The *peritoneum* (*p p′*), on the anterior surface of the uterus, passes on to the wall of the gestation sac, which is not nearly so thick at this point.

The *intestines* (*I*) are closely incorporated with the sac wall as you follow it upwards.

The *vagina* (*V*) is cut obliquely in its upper two-thirds.

II. *The Vertical Mesial Section.*

The mesial section of the pelvis passes to the right of the uterine cavity (owing to the lateral displacement of the uterus), which is therefore not divided; but the vagina is divided throughout its extent. More of the bladder is seen in this section, and more of the lower end of the rectum; but the upper portion of the rectum (lying, as already said, to the right of the middle line) is only grazed here.

The relations of the sac to the posterior fornix and the fundus uteri are the same here as in the former section.

The lateral sections are the most interesting, as enabling us to trace the connexion of the sac with the Fallopian tubes. In the drawing of the *left lateral section,* made by Dr Walker after the preparation had thawed, you can trace the left Fallopian tube from the left angle of the uterus throughout its course to the fimbriated end. It simply runs in the sac wall. Below it is the left ovary, somewhat expanded, and also incorporated with the sac wall. The sac has not therefore been developed from the left tube.

The left ureter can also be seen pushed aside by the sac, and dilated.

In the *right lateral section* we find the right Fallopian tube much convoluted, and cut across at various points. The opposite face of this section shows that the tube communicates directly with the gestation sac by a patulous opening, suggesting that at least the portion of the wall in this vicinity is formed of expanded tube. The sac wall is much thicker here, and shows in its anterior part a cyst cavity separated from the proper cavity of the sac by a considerable thickness of wall.

The intestines are entirely displaced upwards as far as the summit of the sac; and here the vermiform appendix is seen,—greatly altered in appearance and position, its walls much thickened, and its cavity occupied by caseous-like material. Behind the sac is seen the greatly dilated right ureter passing round its lower angle to reappear below it on its way to the bladder.

The gestation sac is evidently developed in connexion with the right Fallopian tube. The noteworthy features are—its relations to the uterus and to the peritoneal cavity.

As far as the clinical facts go, it seems to have been from an early period posterior to the uterus; and it is noteworthy also that during the first two and a half months there were no symptoms pointing to rupture. To account for these facts, you might suppose that the sac had fallen down and was lying in the pouch of Douglas when Dr Ferguson saw the case in March. That a sac can come to occupy this situation and grow there is, I think, proved by the case that I laid formerly before the Society. It would be extremely difficult to diagnose a sac in that position from the retroverted gravid uterus. The attempt to replace it must then have been followed by rupture; and it is not quite clear whether rupture took place into the peritoneal cavity or the broad ligament. We must remember what a very delicate membrane the peritoneum is—a mere layer of epithelial cells with a film of connective tissue; and how the pressure of a tumour causing adhesions completely obliterates it. I do not attach, therefore, much importance to the fact that the peritoneum cannot be traced round the tumour; and considering the delicacy of the peritoneum, I think we may attach too much importance clinically to the difference between intra- and extra-peritoneal ruptures.

The appearance of the sac wall at the fundus is, however, distinctly in favour of the view that the peritoneum has been dissected off the posterior wall of the uterus by the advancing sac,—that is to say, that its growth after rupture was extra-peritoneal. Against this is the fact that the sac was mesial and posterior. One would expect a sac, burst into the broad ligament, to displace the uterus laterally, dissecting its way specially to one side of the pouch of Douglas; in this case it has extended both to right and left of the middle line, simulating throughout in its growth exactly the relations of the retroflexed gravid fundus. The simulation was further maintained by the almost complete amenorrhœa. There was a slight hæmorrhage in the first week of May, and also on two occasions while she was in hospital.

Retention of Urine was present about the same period that we find it in retroversion of the gravid uterus; as also the upward and forward displacement of the vagina and cervix. The reason for these will be evident when you look at the relation of the tumour to the uterus and bladder as seen in the frozen sections.

What, then, are we to rely on for *Differential Diagnosis* in such a case?

Hæmorrhage from the uterus during pregnancy should always put us on our guard. We associate it with a threatening of labour; and in ninety-nine cases out of a hundred it means that. But if a hæmorrhage has occurred at an early period of gestation, without being followed by abortion, and if it has occurred on different occasions, we should always keep before us the possibility that the ovum is not growing in the uterus, but is extra-uterine. In this case the slight hæmorrhage on three occasions should have suggested the possibility of an extra-uterine gestation.

The only physical sign we can rely on in such cases as these is the difference between the feeling on palpation between a gestation sac and a pregnant uterus. The fingers per vaginam may not be able to recognise any difference between a gestation sac and the uterus; but the abdominal hand will detect some peculiarity in the shape, or the outline or consistence, which will raise the suspicion that the tumour is not a normal pregnant uterus. In both these cases the contour of the abdominal swelling was unlike that of the rounded fundus; it was harder, and tending to bulge to one side instead of rising towards the middle. And in the second case, though the uterus was not separate from the sac so that you could recognise it distinctly, there was a swelling in the anterior surface of the sac which varied in its consistence from time to time—a characteristic which showed that this part of the tumour was uterine, although the whole tumour was not the uterus.

Retroflexion of the gravid uterus is generally regarded as a well-marked condition, as having such obvious symptoms and physical signs that it should be recognised without difficulty.

Such cases as the foregoing, exceptionally rare though they are, and in which you have a comparatively rare condition simulating a more frequent and obvious one, are, I think, of peculiar value.

IV.—ON INSPECTION OF THE FEMALE BLADDER AND URETHRA, WITH SPECIAL REFERENCE TO DR HOWARD KELLY'S METHOD.

By N. T. Brewis, M.B., F.R.C.P.E., Lecturer on Gynæcology, Edinburgh Medical School.

(*Read before the Obstetrical Society of Edinburgh*, 13*th June* 1894.)

Mr President,—At the commencement of the session you indicated that short papers of a practical nature were desirable at our meetings, and that you would be glad of such contributions from the Fellows. In response to your invitation I have pleasure in bringing before the Society to-night a method which has recently been introduced for inspection of the interior of the female bladder and urethra,—a method which, from the simple way in which it is carried out, and the satisfactory results it gives, bids fair to be of the greatest service in the diagnosis and treatment of vesical and urethral affections.

Previous to the introduction of this method by Dr Kelly, inspection of these organs was more or less of a failure; few gynæcologists practised it,—they contented themselves with palpation, which was easily performed and was a success. Now, inspection can be as easily and successfully practised as palpation, with as valuable results.

Before describing this new method, let me give a brief retrospect of some of the most approved bladder specula, and the reason of their want of success.

1. Simon's specula are well known. They consist of a series of seven hard rubber specula, varying from ¾ of a centimetre to 2 centimetres in diameter. Each is provided with an obturator, to be used while the instrument is introduced, and afterwards withdrawn. They are excellent dilators of the urethra, and thus are useful in palpation and in some operative procedures; but for purposes of inspection they are of little use, because, being hollow, the urine escapes, the bladder walls fall together, and only a small portion of the interior can be seen.

2. Skene's endoscope. This instrument is composed of three parts, viz., a glass tube, shaped like a test-tube; a mirror, which is placed in the tube; and a hard rubber speculum, fenestrated or open. Light is thrown into the tube, and the portion of the urethra or bladder opposite the mirror is seen. As I have no personal experience of this instrument, my opinion regarding it cannot carry much weight. To me it would seem inefficient, from the fact that the appearance of the vesical walls as portrayed in the mirror must be somewhat altered from being reflected through the glass tube and through the urine which the bladder contains. I imagine, also, that the whole of the interior, and more particularly the base of the bladder, could not be inspected. Skene, in his work on *Diseases of the Bladder and Urethra*, published in 1878, highly extols the apparatus, and says he can accomplish with it all that is to be desired. He now seems to have changed his mind, as in his recent work on *Diseases of Women* he remarks that "the cystoscope of Nitze and Leiter is the only instrument for thoroughly investigating the bladder," and on the same page only claims for the endoscope that with it a dexterous manipulator can thoroughly examine the urethra and neck of the bladder.

3. To obtain a picture of the interior, Rutenberg distended the viscus with air. He accomplished this by means of a tube incorporated with the speculum, and through which air is driven for purposes of inflation. The speculum, which contains a mirror, is made of silver, and has a glass fenestrum at the further end. Light is reflected into the speculum by a concave mirror, and by moving the instrument in various directions the posterior and lower bladder walls can be plainly seen. Rutenberg, however,

was never able to distinguish the ureteral openings. The objections to this method are that forced distention of the bladder is painful, that under pressure the air may enter the ureters, reach the pelvis or the kidney, and cause pyelitis or pyelo-nephritis. The instrument is a complicated one.

4. Electric illumination with the cystoscope, after the method of Nitze and Leiter, is well known to give excellent results. To my mind this plan is faulty, in that the glare from the lamp gives the walls an unnatural appearance. The healthy mucous membrane of the bladder appears under the electric light to be a reddish-yellow colour. Under direct inspection through Kelly's speculum it is pale. During electric illumination the urine must be clear; if pus or blood be present the walls cannot be seen. It is difficult to estimate the exact size of the object examined, for the size as seen through the instrument varies according to its distance from the prism.

Electric cystoscopy is by no means a simple method. To be successfully applied considerable dexterity is needed, while the apparatus is both complicated and cumbrous.

While each of these instruments has proved a distinct aid in the investigation of the bladder, there is none perfect. The simpler kinds, such as Simon's, fail because the bladder walls are not distended; the more complicated, because the walls are not viewed by direct inspection. To examine the walls by direct inspection it is necessary that they should distend under natural influences, and not by forced measures such as practised by Rutenberg.

It has been left to Dr Kelly to discover that if the bladder is emptied of urine, the pelvis raised, and the urethra opened, the bladder walls separate. This phenomenon is exactly analogous to that which takes place if Sims' speculum is passed into the vagina when the patient is in the semi-prone or genu-facial position. When a woman lies on her back, with hips raised, and air is allowed to enter the bladder, the walls balloon out. This also occurs in the genu-facial or semi-prone postures. Then the whole of the interior of the bladder can be examined by direct inspection through a speculum with the aid of reflected light.

Kelly's Method.—Anæsthesia is not absolutely necessary, but in nervous patients and in inflammatory cases it should be administered. In ordinary cases the insertion of a pledget of cotton wool soaked in a 5 per cent. solution of cocaine into the urethra seven minutes beforehand is sufficient. The bladder is emptied with the catheter and the pelvis raised about 16 inches above the level of the table. The urethra is now dilated. This is accomplished by passing a series of S-shaped metal dilators. The diameters of the dilators are marked in millimetres. The series begins with No. 5 and runs in pairs up to No. 20. As soon as dilatation of from 12 to 15 millimetres is reached, a speculum of the same size as the last dilator is introduced and the obturator removed. The specula, like the dilators, vary in diameter from 5 to 20 millimetres; they are cylindrical, 9½ centimetres long, and each is provided with a conical mouth to assist in reflecting the light into the bladder. A residuum of urine always remains in the bladder after the catheter has been used; this is removed by a simple suction apparatus. The examiner puts on a head mirror and reflects light down the speculum. During the day sufficient light can be obtained from a window; at other times from a gas jet, a lamp, an electric drop light, or, if the room be dark, from a candle.

The bladder can now be inspected. Kelly says:—"The posterior wall of the air-distended bladder lies from 2 to 5 centimetres distant from the anterior wall, and over this white background, which first presents itself to the eye of the observer, is visible a beautiful network of branching and anastomosing vessels. The veins accompanying the arteries are easily distinguished by their dark colour. The larger vessels evidently come to the surface from the deeper layers of the bladder, where they branch stellately, divide, and anastomose. By elevating the handle of the speculum the field of vision sweeps over the base of the bladder until in some cases the region of the inter-ureteric ligament comes into view, often marked by a slightly elevated transverse fold or a distinct difference in colour. By turning the speculum thirty degrees to one side or the other and looking sharply, a ureteral orifice is discovered. While inspecting the ureter I have frequently observed little jets of urine ejected at short intervals, like a miniature fountain; in pathological cases I have seen pus and blood flowing from one ureter while the other discharged normal urine. . . . The bladder mucosa is usually of a slightly deeper rose colour around the ureter, and in the presence of an inflammatory process it even appears deeply injected. . . . In order to ascertain whether it is the ureter which lies within the field, I use as a searcher a long, delicate sound, with a handle bent at an angle of 120°, which is introduced through the speculum into the suspected ureteral orifice. If it be the ureteral orifice which is under inspection, the searcher passes easily from 2 to 6 centimetres up the ureter, and the lateral walls of the orifice are slightly raised, appearing as distinct folds with a dark pit between them. The searcher may be withdrawn and a ureteral catheter at once introduced, if it is desirable to collect the urine direct from the kidney. The catheter may be left in place some minutes or an hour or more. The urine which accumulates in the meantime in the bladder necessarily represents the discharge of the opposite kidney. In this way the urine of both kidneys may be isolated by simply introducing one catheter. By placing the patient in the genu-facial posture, an extreme distention of the bladder is obtained in the form of a flattened ovoid. In this posture the inter-ureteric ligament also comes sharply into view; but the ureters are not so readily seen, as they are concealed by the outer extremities of the fold. The genu-facial posture is indispensable in some inflammatory cases, when the bladder will not balloon out in the ordinary posture, owing to its thickened walls. A satisfactory inspection can also be made in many cases in the semi-prone position by elevating the pelvis on a pillow."

Inspection of the Urethra.—The whole of the interior of the urethra can be thoroughly viewed on withdrawing the speculum. If this be done slowly and carefully, each line of the canal can be distinctly seen. In colour it forms a marked contrast to the bladder. The mucosa of the latter is pale, while that of the urethra has a purplish-red appearance. Its longitudinal folds are also visible.

I will not enter into the relative merits of palpation and inspection, but will simply state that whenever the latter can be thoroughly practised, as in the manner just described, it must be more exact than palpation. An additional advantage of Kelly's method is that palpation can be employed as well as inspection,—the object can be first viewed through the speculum, and subsequently palpated through the urethra, which is already dilated.

To conclude, I think Dr Kelly may justly claim for his method that it is simple, easily performed, and that as a diagnostic means it is most satisfactory. As far as I know, it is followed by no bad consequences. It is not only valuable in diagnosis, but is of great service in treatment; as through the specula instruments can be passed, and agents applied directly to the diseased area. By passing probes along the ureters the location of these structures can be recognised, and consequently avoided in such operations as hysterectomy.

I consider that this simple plan will inaugurate a new epoch in the investigation of vesical and urethral affections,—an epoch only second in importance to that which followed the introduction of Sims' speculum in vaginal and uterine examinations. I now add inspection of the bladder to the other means of exploration in gynæcological cases, and during the last three months I have included it in my practical course, and have taught my students not only to inspect the bladder, but to catheterize the ureters.

V.—CASE OF SEVERE MENSTRUAL HEADACHE SUCCESSFULLY TREATED BY PREMENSTRUAL VENESECTION.

By RICHARD J. ERSKINE YOUNG, M.D.

(Read before the Obstetrical Society of Edinburgh, 11th July 1894.)

THE patient, Miss H., aged 29, came to consult my father, Dr James Young, in February 1893. She complained of most intense headache, which she said began coincidently with the menstrual epoch accompanying it, and disappeared only about four days after the cessation of the discharge. Menstruation began at the age of sixteen. From that time until March 1893 she continued to suffer intensely from this condition, supperadded to which was a distressing sense of weight and fulness in the head. It was so severe that she could not lift up her head, being thus rendered entirely unfit for duty, both during menstruation and for several days afterwards. She was naturally of a somewhat plethoric habit of body. The palpebral conjunctivæ were somewhat injected in appearance. The pulse was large, full, and somewhat incompressible. She complained also of throbbing in the temples. For a few months previous to this time she had suffered from dysmenorrhœa, which was accounted for by a degree of uterine congestion which was present. This condition yielded to glycerine packing, and not douching. The headache, however, was quite as severe as before,—the same condition, in fact, which had obtained since puberty.

On seeing the case with my father, I suggested the performance of venesection three or four days previous to the next menstruation. Having obtained the patient's consent, and since the next catamenial flow was expected on Tuesday, March 14, I arranged to perform general bloodletting on Saturday, March 11. The menses, however, unexpectedly appeared on the latter date, and of this fact I was informed only on the Monday. Before performing venesection, I took a sphygmogram (Fig. 1), which I now show you. If you will kindly examine this tracing, you will observe the high upstroke of the lever, thus showing the bounding character of the pulse. I then drew blood to ten ounces; a few hours after which, I again took a sphygmogram (Fig. 2), which shows well the absence of the bounding character. The patient experienced slight faintness on sitting up for twenty-four hours after the operation, but which disappeared after a few days. For the remainder of the menstrual period, and afterwards, the headache, sense of weight, and oppression were almost *nil*, and that for the first time since puberty. I now allowed about four weeks to elapse, and after careful consideration

FIG. 1.—Before the First Venesection.

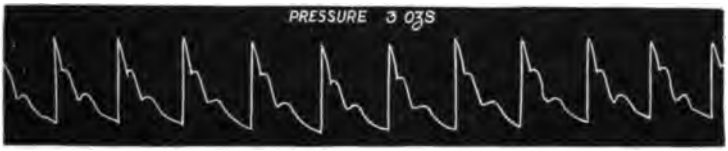
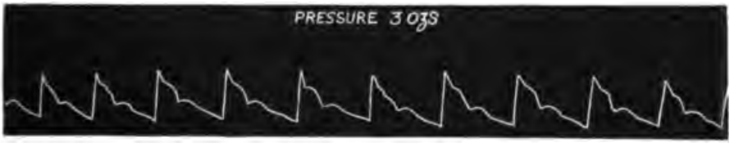


FIG. 2.—After the First Venesection.



I decided to repeat the operation. I therefore visited her on Wednesday, April 5th. She said she had been very well except for slight headache for a few days previous to my present visit. I found the pulse again somewhat full and bounding. Having taken a pulse tracing (Fig. 3), I performed venesection to eight ounces, with no unpleasant result. Next day I visited the patient, and found her well and free from any headache whatever, even though the catamenial flow had begun. On this occasion the sphygmogram (Fig. 4) shows entire absence of the bounding character, with slight increase of tension.

FIG. 3.—Before the Second Venesection.

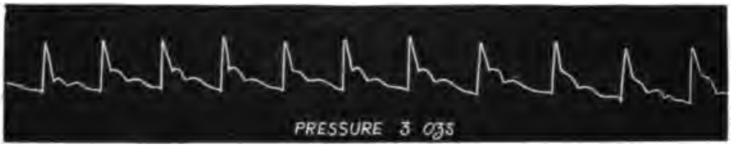
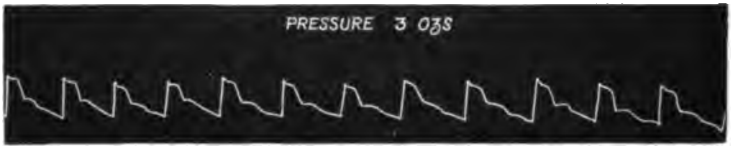


FIG. 4.—After the Second Venesection.



On Wednesday, April 12, I saw her. The pulse was good. She was quite free from headache, and expressed herself as being as well as could be desired. The patient has continued to report herself at intervals from that time up to the present, and I am glad to say that she has always the same tale to tell, viz., that though menstruation has appeared regularly, it is neither accompanied nor succeeded by headache, weight, oppression, nor any unpleasant sensation whatsoever. I can find no other cause for this result than a timely moderate venesection.

There are, I think, few members of the medical profession who will not allow that bloodletting has a perhaps increasing sphere in the treatment of certain diseases. In such, then, let us not neglect it.

VI.—THE PHYSICAL EXAMINATION OF THE SPLEEN AND KIDNEYS.

By ALEX. M. STALKER, M.D., Dundee.

(*Continued from page* 137.)

THE interest attaching to a palpable spleen is almost always referable to the fact that we know thereby that the organ is enlarged, the number of cases in which it is simply displaced downwards being very few. But, passing now to the physical examination of the kidneys, it may be premised, to begin with, that the conditions are precisely the reverse, the displacement being common, the enlargement rare.

As to the frequency of displacement, the text-books are somewhat at variance. Those devoted to physical diagnosis from the point of view of internal medicine give some consideration to the subject of palpation of the kidneys, but the authors appear to look upon it as giving positive results only in cases of tumour-enlargement, or of the very marked displacement attended by symptoms, and known as floating kidney. This statement is in the main true, even of a monograph like Landau's, where the whole subject of floating kidney is exhaustively treated.

But within the last few years the examination of the kidneys has been a good deal more attended to than formerly by surgeons, their interests in the position of the organs having become both practical and urgent. The requirement for a careful diagnosis between the different kinds of abdominal tumours, the possibility of being actually able to feel calculi in the pelvis of a kidney before operating, the necessity for being as sure as may be of the presence of a second kidney when the removal of the first is contemplated,—all these things have worked together, and surgeons are in the habit of examining the region of the kidney, and have begun to formulate, with more or less precision, the conditions which make a kidney palpable. For in general they have restricted themselves to palpation, as, though percussion of the kidney has given a deal of thought to a number of very competent observers, it seems to be now by tacit consent dropped as a usual or reliable method.

I shall deal with the palpation of the right kidney first. The examiner stands or sits at the right side of the patient in bed. (A different method is advocated in Germany, where one is advised to examine the patient in the standing position. But there physical examination is conducted with a freedom which is neither possible nor desirable in this country, and it is better to insist solely on the way which can be actually practised.) Placing the fingers of the left hand over the lumbar muscles at the back, and the fingers of the right hand just beneath the ribs over the front of the abdomen, but outside the rectus muscle, he brings the hands gently together, when he may possibly now have the right kidney in his grasp. He soon comes to know it,—(1) by the fact that what he holds between his hands is distinctly more than his estimate of the combined thickness of the anterior and posterior abdominal walls in the particular patient; (2) by a firm, resistant sensation peculiar to the kidney; (3) by a certain painful sensation which the patient complains of under firm pressure; and (4), very often by the organ suddenly slipping upwards from under the fingers, as I have heard it put, like a piece of worn soap slipping from the fingers in a bath. If the kidney is far down, and the hands are grasping it by the middle or by the upper half, the slipping back will only occur when the grasp is shifted down a bit.

If all these indications are absent, the examiner, taking care to have his hands brought together as far up towards the renal region proper as the patient will with perfect ease allow, directs the latter to take a deep breath. This must be done without any great effort, but moderately quickly. The kidney may then be felt to descend and push its way between the two hands to a varying distance. It may come down for only a part of the lower half, in which case it slips back at once on expiration. It may come down to about the middle, or even further, when the hands of the examiner, with but moderate pressure, can catch it and keep it from going back with the diaphragm on expiration. On the other hand, the tip of the lower end may alone be felt, or the hands in front may feel merely an increased fulness coming down from above. This last is a degree of success I do not take account of. The resistance of the abdominal wall is sometimes too great to allow the hand in front to feel anything definite, but yet if the bi-manual pressure be kept up, the hand behind may feel the kidney descending. If none of these manœuvres bring definite knowledge, and circumstances yet make it probable that the kidney lies between the two hands, either temporarily or permanently, we can endeavour to find this out by *ballottement*—tilting forward the lumbar region with the left hand, when the kidney may, if present, be felt striking against the fingers of the right. This is the more useful, as it is the best way of realizing the peculiar firmness of the renal tissue.

The analysis of the conditions which render possible these degrees of success is not difficult. To begin with, with the exception of that which I have mentioned, in which the hand behind alone feels anything definite, they all presuppose a certain relaxation of the abdominal muscles and absence of any great amount of fat in the anterior wall. In other words, they all presuppose that the hand can actually in some measure get to the region where the displaced or displaceable kidney is. In the second place, the normal mobility of the kidney must be exaggerated before it can be brought down so far. The right kidney has a certain slight up and down movement in inspiration, produced probably by the movements of the diaphragm being transmitted through the liver. In a state of rude health, and with a fair amount of fat in the body, the kidney is kept in its place by the tension of the perinephric fat-cushion. In such a state the downward pressure of the liver on the kidney, as the substance of the liver is softer than that of the kidney, tends to force in the surface of the former organ, producing the depression called the *impressio renalis;* but there must be a certain corresponding effect on the kidney, taking the form, not of a mark on the surface, but of a displacement of the whole organ. This displacement is no doubt very slight, for the kidney with the perinephric fat forms a very gentle slope at the side of the spine, and the liver coming down on this tends to glide over it rather. The important thing to note is that the *impressio renalis* bears witness to the fact that there is this certain depressive influence exercised by the lower surface of the liver. Now, in a person suffering from any wasting, the fat more or less disappears, and the kidney lies more loosely in its peritoneal covering. It may lie so loosely as to slip down by its own weight, get settled in its new position, and is then felt at the back of the abdomen without calling in the aid of inspiration. Even where it is not displaced like this, if it is lying bare of its usually surrounding fat, it forms a swelling at the side of the spine, with steeper and more prominent edges than normal, is more easily caught by the posterior edge and under surface of the liver, and may partake of the whole downward movement of the diaphragm in inspiration.

These are briefly, then, the two conditions required,—(1) that the palpation of the right lumbar region should be possible, and (2) that the inspiratory movement of the kidney should be exaggerated.

The first deductive outcome of this is that a large proportion of women who have borne children, and who are also suffering from more or less loss of their natural fat, have a palpable right kidney. There is no abdomen so palpable as that of a multiparous woman. Of course it is merely the actual effect of the child-bearing on the anterior abdominal wall which is in question, so that those cases which occur now and then in which the abdomen has been well braced up throughout one or more pregnancies, so that the prominence of the uterus has been kept at the possible minimum, and in which the striæ gravidarum are few and ill-marked, are not reckoned. In such multiparæ the tension of the abdominal wall may be very good indeed, and equal to that of a nullipara. But when the old striæ are well marked, and the skin lying with numerous superfluous folds, the muscularity is generally poor and toneless; and it is possible more or less, when the condition of the intestines allow, to palpate from the front a large portion of the posterior abdominal wall. Of course, when there is inflammatory mischief in the abdomen, this is out of the question. But considerable flatulent distention is not necessarily a serious obstacle, for it may be the result also of the toneless condition of the abdominal muscles, and in such a case will certainly allow of pretty deep pressure.

That this relaxation of the abdominal wall as a result of pregnancy will of itself render the right kidney palpable, is, according to my experience, doubtful. But a very large number of the patients who come into hospital, or on whom we attend in private practice, are for one reason or other suffering from diminution of the natural amount of fat—the second factor which I have sought to show is necessary. This diminution acts in two ways, as it not only increases the mobility of the kidney in inspiration, but it renders the abdominal wall thinner. In a case of advanced cachexia in a multiparous woman when there is no affection of the abdomen and no œdematous thickening of the skin, the anterior abdominal wall may rest on the subjacent tissue as almost a flaccid membrane, and the right kidney may lie beneath the fingers or be brought down to lie beneath them in its whole length. The examiner in such an instance is able to define the contour and consistency of the organ with little less precision than at a post-mortem examination when handling the organ in its peritoneal covering. This, of course, is an extreme case, but it is not so in the sense of being a rare one. Among a hundred female patients in the medical wards of a general hospital, where there is no picking of the cases, there will probably be always three or four which will demonstrate this; and taking all the multiparous women together in these wards, I should say that the presence of the right kidney is definitely ascertainable in one half of them.

The left kidney is not so accessible to palpation as the right. The conditions, however, which loosen the latter and bring it within reach of the fingers are not without influence on the former also. A very loose left kidney seems to be caught by the edge of the liver and forced down in a manner similar to that which occurs on the other side, so that the left is palpable in a certain proportion—about one-sixth—of the cases in which the right can be felt. In a general way the degree of ease with which we can feel the one determines the probability that we shall be able to feel the other. Sometimes the left can be felt alone, but this depends on special circumstances with which we are not now dealing, as the question before us merely concerns the general conditions under which we can feel the kidneys.

In nulliparous females the kidneys are palpable in a certain small proportion of cases. The muscles of the abdomen, like the others in the body of females, have very much less rigidity and hardness than in males, and unless there is abundant subcutaneous fat or neurotic shrinking, they are much more easy to handle. But this will not help so much as when the abdominal wall has been stretched by one or more pregnancies, and in nulliparæ emaciation requires to be much more pronounced in order that the right kidney even should be accessible to the fingers.

In children palpation of the kidneys is not fruitful in positive results. They cannot be so easily made to inspire deeply, and in addition to that there is no fatty capsule around the kidney until after ten years of age, so that the slackening of the tension round the organ which the disappearance of the fat produces in adults is not possible in the young.

In adult males it is rarely possible to do more than feel now and then the lower end of the right kidney in such a case as one of advanced phthisis.

The expression has not hitherto been used, but I must now explain what bearing all this has on the subject of "floating kidney." It is not to be understood that the argument of the preceding remarks is to the effect that floating kidney is an extremely common affection. What I would rather say is that floating kidney, ordinarily so called, is but an extreme instance of a condition the less marked cases of which may be met with every day. Between the cases in which but the lower end of the kidney can be felt on deep inspiration and those in which the whole kidney has fallen forward to the front of the abdomen, dragging its peritoneal covering behind it as a mesonephron, there is a continuous series of cases presenting every possible degree of looseness of the organ. It is not right to say that mobility or displacement of the kidney is itself a morbid condition, but when it is displaced or movable to such an extent as to be exposed to irritation from external agencies, or as to interfere with the functions of other organs, *e.g.*, the ureter,—in short, when it is a cause of suffering and complaint, we may continue to recognise it as a distinct nosological entity. But so far as I have observed, the degree in which the more extreme displacements cause suffering is in like case with the suffering arising from prolapse of the womb, and depends more on the neurotic sensibility of the patient than on the extent of the displacement. I have seen an old woman who was being treated for chronic bronchitis, and who was quite unaware of the fact that her left kidney was lying in close approximation to the anterior wall of the abdomen under the level of the umbilicus for the lower three-fourths of its extent. I have never seen a case in which a floating kidney gave rise to symptoms of kinking or twisting of the ureter, and of course I do not include those cases in this remark.

Another question associated with mobile kidney is the relation it bears to "enteroptosis." This is the name given to a condition which has excited much attention in France, where it is called "maladie de Glénard," from the physician who described it some years ago. It is a form of dyspepsia which is supposed to be dependent on a relaxed condition of the ligaments and connexions of the abdominal viscera, more especially of the transverse colon. This is said to be imperfectly braced-up by the gastro-colic omentum, and as a consequence, while the bowel slips downwards in the abdomen, there is kinking at the hepatic and splenic flexures, with constipation and other dyspeptic complaints. There is reason to question this explanation, but unmerited doubt has been thrown over the existence of the condition. In a case that has come under my care the features are as follows:—The patient is a lady of about 35 years of age, the mother of five children. She is of an active habit of body, but has always been thin and somewhat pale. When pregnant she is very much troubled with early sickness, but in the later months she puts on flesh and has the best health she ever is permitted to enjoy. This remains for three or four months after confinement; then between the nursing and an incurable practice of putting as much work through her hands as she possibly can, she falls off. Constipation, pain after eating, flatulence, want of appetite, pallor and emaciation, come on steadily, but all these symptoms seem curiously dependent on getting up and moving about. At first the gastralgia does not trouble her till late in the afternoon, then it wears back in the day, until she cannot count on more than two or three hours in the forenoon. When things come to such a pass she can get relief at once by going to bed for a day or two, when her appetite and general condition at once improve. At all times, too, unless her condition is very bad, half an hour or an hour in bed will bring speedy relief. In this patient both kidneys are displaced slightly downwards and have a great range of movement in inspiration. Whether the stomach or colon is displaced I am not able to say with certainty. But it does not appear to me justifiable to argue that the symptoms are in any way dependent on the mobility of the kidneys. Given that a multiparous woman is so far reduced in flesh as sometimes is the case with this patient, then the mobility of the kidneys is just what one would expect. The pain is referred by the lady to the stomach, and she can take no nourishment without increasing it; but on detailed questioning she always says it seems, to begin with, to come from higher up, as if the left side of the chest in its lower half were being gripped, and as if the breathing were being interfered with. There is never any pain about the kidneys, though they have their normal tenderness on pressure.

This is the only case I have seen of the kind, and I can hardly think it common; but my reason for bringing it in here is to illustrate the difficulty that one is in when an attempt is made to explain some of the symptoms of such a case by the supposition of "floating kidney." In such a case the kidneys are displaced and mobile,—"floating," if one likes to call them so; but then they ought to be. In any woman who has borne children, dyspepsia to such an extent as to interfere seriously with the taking of nourishment may produce so much emaciation as to bring the kidneys within reach of the fingers; and it is to be feared that in many cases of this kind the palpability of the kidneys has led the French observers to suppose them cases of enteroptosis. Only on such a supposition can we explain the enormous numbers of instances of this affection which some have reported.

Note.—Since the above was written I have observed in Messrs Skene and George E. Keith's work on *Abdominal Surgery* (pp. 10, 11) that these two surgeons speak of the palpation of the kidneys as successful in positive result in all cases except in those where there is an abnormal amount of fat. They, however, include, I imagine, even those cases which I have spoken of as giving merely an increased resistance in inspiration. It may be that this increased resistance is due partly to the descent of the kidney, but I have not felt justified in making use of such instances. They certainly do not bring the convincing assurance that we have when we can feel the peculiar resistance and outline of the organ.

VII.—ON THE QUESTION OF THE SECRETION OR TRANSUDATION OF ALBUMIN IN CASES OF ALBUMINURIA.[1]

By FRANCIS D. BOYD, M.D., F.R.C.P. Ed., Clinical Medicine Tutor, Royal Infirmary, Edinburgh.

THE first and essential factor in the production of albuminuria seems to be an alteration in the nutrition and function of the epithelium covering the glomerular tuft (1).[2] Though it has been ably maintained that the urine which comes from the Malpighian tufts, in the normal state, contains albumin which becomes reabsorbed by the epithelium of the uriniferous tubules (2), it has never been proved that this is the case. Indeed, the observations of Posner (3) by his boiling method contradict this view. Pieces of the organ to be examined were plunged into boiling water for one to two minutes, washed with cold water, and either examined directly or after hardening in alcohol, Müller's fluid, etc. Where albuminuria had been present during life, the microscope revealed coagulated masses of albumin in the capsule chambers and tubules. When the healthy kidney, either of man or animals, was examined, no evidence of albumin menisci was found.

I can support Posner's conclusions from numerous observations by the boiling method on the kidneys of rabbits. A large number of kidneys from rabbits in a healthy state were examined, and in no case did the boiling method reveal the presence of albumin menisci. When, however, albuminuria was induced by the intravenous injection of cantharidinate of potash (saturated solution), albumin menisci could always be demonstrated. It is true, as Senator (4) points out, that albumin, if present in the healthy condition, must be in such small quantity that it would be difficult to demonstrate; indeed, Miss Bridges Adams (5) failed to find it in the capsules in some cases where it was present in the urine. (I have failed to obtain Miss Adams's original paper, and the reference I found does not quote her method.) My results, however, do not agree with Miss Adams's, and in such a case I think a positive result is of more value than a negative.

If we regard the secretion of the watery part of the urine as a mere mechanical transudation through an animal membrane, it is very hard to understand how albumin can, under normal circumstances, fail to pass through the glomerular epithelium. But, then, is urine a mere transudation? The glomerular loop, from which most of the albumin in cases of albuminuria, along with the major part of the watery constituent of the urine, passes, is wrapped round by a layer of epithelial cells. These cells seem to have a distinct function of a secretory nature. We would expect that if the water transuded through this membrane increased blood-pressure would inevitably cause an increased flow of watery urine. But this is not the case. If by obstructing the venous outflow we raise the pressure within the glomerular system, we do not get an increased, but rather a diminished flow of urine. Again, diffusion, as distinct from filtration, will not account for the passage of water and other substances through this epithelium; for as Stokvis (6) has shown, egg albumin, which differs very little in its diffusibility from serum albumin, if injected into the circulation will very quickly pass into the urine; normally we do not find serum albumin present in the urine. That glomerular epithelium possesses a distinctive secretory activity for certain substances there can be no doubt; for Adami (7) has demonstrated that it will take up and excrete hæmoglobin, if laky blood be injected into the circulation, even though the passage of the watery part of the urine *has been inhibited* through section of the spinal cord in the cervical regions.

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[1] This, as in the case of the former paper, "On the Relative Proportions of the two Proteids in the Urine in Cases of Albuminuria," is from work done in the Laboratory of the Royal College of Physicians, Edinburgh.

[2] The figures within parentheses refer to Literature at end of paper.

In this relation we must also remember the experiments of Wittich (8), Clirzowszezewski (9), Soberanski (10), and Jacobi (11), performed with Jacobi's "Hämatisator." Indico-carmine was added to the blood, and it was found in the glomerular epithelium. They noted also that the kidney could remove all the indicocarmine from the organ by secretion. In the light, then, of all this recent work, we cannot accept the purely mechanical view of the secretion of urine (watery part) by the glomeruli, and the question naturally arises—Can we accept a purely mechanical theory for the passage of albumin into the urine in cases of albuminuria? Does the albumin present in coming from the glomeruli in cases of albuminuria transude, under physical laws, through an injured animal membrane, or possibly a membrane stretched under increased vascular pressure?

Stokvis held that without increased blood-pressure to cause the transudation there could be no albuminuria. Bartels (12) states that perfectly healthy kidneys, solely in consequence of an altered state of blood-pressure upon their vessels, can excrete albuminous urine. He quotes the case of a man who suffered from obstruction of the vena cava ascendens from a gummatous tumour and thrombosis; a case of relative insufficiency of the tricuspid valve, with the phenomena of backward pressure; and a case of obstruction of the ureter. In the first two cases there was considerable cyanosis; and taking this into account we can, I think, explain the albuminuria from another cause than blood-pressure. Jacobi (13), J. Munk (14), and Senator, and Abeles (15) have shown that by perfusing the kidney in Jacobi's "Hämatisator" we can get a secretion which is true urine, and that the secretion usually contains albumin, but that the less time spent over the technique of the experiment the less albumin do we get, and as arterial blood circulates through the kidney the albumin disappears, though the blood-pressure remains the same, the kidney epithelium recovering from the *poisoning by* *carbonic dioxide* which had taken place during the preparation for the experiment. Stokvis has shown that albuminuria can be produced in animals by obstructing respiration through the trachea and producing cyanosis. These two conditions seem to me comparable to the albuminuria which we get in heart disease where no chronic interstitial change can be found in the kidney, and to the albuminuria we find after a convulsion. We have epithelium which is poisoned by Co_2, and the albumin passes into the urine as the result of the vital activity of diseased secretory cells.

If we could show that increased blood-pressure *per se* could produce albuminuria, it would be a point in favour of the mechanical theory. Much experimental work has been done with this view, but the results are contradictory. Meyer (16), in a paper I have been unable to obtain, found that in raising the blood-pressure by ligature of the aorta below the renal arteries he got albumin in the urine. Robson (17) found none, and Fririchs (18) seems to have obtained the same result. Litten (19) found none. Most of those experiments were performed on rabbits.[1]

In such an observation negative observations are of more value than positive, owing to the possible injury to the kidney during the operation. We are forced, then, to conclude that these experiments do not prove that increased blood-pressure *per se* will produce albuminuria if the membrane covering the glomerular tuft be healthy. But given a diseased layer of cells, is it the blood-pressure which causes the albumin to pass through the membrane into the urine? Does the albumin diffuse, or is it secreted by the glandular epithelium?

Against the purely mechanical theory, the following observations seem to tell strongly:—

I. *The variations in the amounts of the two proteids in the urine in different cases, and in the same case from day to day, are too great to be accounted for by a mere alteration in the blood-pressure, causing the two proteids to diffuse through the membrane at different rates.* During the last few years I have made observations on a very large number of cases of albuminuria. The method used in all the observations was the gravimetric described by Noël Paton (21). The total proteids in the urine were precipitated by heat with the addition of a salt solution (acetate of soda), and acidulation with acetic acid. The globulin was precipitated by the addition of an equal quantity of a saturated solution of ammonium sulphate to the urine, which had been rendered acid with acetic acid. The globulin having been precipitated, was removed by filtration, and the amount of proteid in the filtrate estimated by heat. This gave the amount of serum albumin; by deducting the amount from the total proteids we get the amount of globulin. In all the observations the figures represent grammes, total or per cent. By the term Quotient is meant the proportion of serum albumin to globulin $\left(\frac{\text{S.A.}}{\text{S.G.}}\right)$.

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[1] More recently Pichler and Vogt (20) found albuminuria in only one case on clamping the crural arteries in both sides in dogs for twenty to thirty minutes. In every case they found nucleo-albuminuria, which lasted on an average two days. These results seem to upset all former work on the question.

In different cases of chronic interstitial nephritis, a quotient anywhere between 0·75 – 12 – 30, and even in one case as high as 148, may occur. From day to day in the same case very great variations may occur though there was no indication of a change in the arterial blood-pressure, and the amount of urine (which should correspond to the blood-pressure, if we take the mechanical view of the secretion of the watery part of the urine) remained the same. Thus in a case of waxy degeneration of the kidney, on one day a quotient of 1·9, the next day of 11·0, was observed. In a case of acute nephritis where there was *no blood in the urine*, one day 1·3, the next day 8·3. In a case of chronic interstitial nephritis, one day the quotient was 24·5, two days afterwards 0·9.

Disease.	Total Proteids.	Serum Albumin.	Serum Globulin.	Quotient.
	per cent.	per cent.	per cent.	per cent.
Acute nephritis, ……	0·26	0·15	0·11	1·3
Do. ……………	0·14	0·125	0·015	8·3
Waxy disease of kidney, ………	0·945	0·625	0·32	1·9
Do. ……………	0·70	0·645	0·055	11·0
Chronic interstitial nephritis, ………	0·425	0·205	0·22	0·93
Do. ……………	0·475	0·325	0·15	2·8
Do. ……………	0·34	0·31	0·03	10·3
Do. ……………	0·42	0·25	0·17	1·4

Numerous other observations could be given. These, however, exemplify the fact that the variations in different cases, and in the same case at different times, are very great,—too great, I think, to be accounted for by merely increased or diminished blood-pressure, causing increased or diminished transudation of the two proteids through the glomerular epithelial layer.

II. *One proteid alone may be present in the urine.* A good deal of attention has been paid to the diffusion of the two proteids of the blood serum through animal membranes under varying pressures. The most satisfactory work on this question seems to be that of Gottwald (22). He found that serum albumin transudes with greater ease than globulin. *In no case was globulin found absent from the transudate.*

In the second volume of the *Edinburgh Hospital Reports* I have quoted four cases of nephritis which came under my observation, where on several occasions none of the known tests revealed the presence of globulin in the urine, though there was always serum albumin in fair amount (0·075 to 0·76 per cent.). There are three cases recorded where globulin alone was present in the urine in albuminuria. The first is by Maguire (23), in a case of albuminuria of pregnancy.

Werner (24) of Heidelberg quotes the case of a child admitted to hospital suffering from acute nephritis with œdema. The urine was scanty, high-coloured, of high specific gravity, containing fatty and granular casts, but no blood. There was a large amount of globulin present, but no serum albumin. The child died of suppression of urine after an illness of eight days. The presence of globulin was ascribed to a breaking-down of the epithelial cells of the kidney, and not to the passage of globulin from the blood into the urine. There is, however, no proof offered that the substance in the urine was cell globulin, and it seems to have been present in such large quantity as to make this more than doubtful. There was no post-mortem examination.

The third case is recorded by Drs Byrom Bramwell (25) and Noël Paton, and has been so recently and fully described elsewhere that I need not do more than mention it.[1]

Thus we see that either of the two proteids may be present in the urine alone. In no case outside the body can we make one proteid of the blood serum pass through an animal membrane without the other accompanying it. Thus I do not think we can explain the presence of the proteid as a mere physical transudation through an injured animal membrane, for then we would inevitably have two proteids in every case of albuminuria.

III. *The day-to-day excretion of serum albumin to the percentage and total amounts, when observed for a considerable period, is more constant than the excretion of globulin.* In every case of albuminuria very large variations occur in the excretion of globulin, both as regards percentage and total amounts, while under similar conditions from day to day the excretion of serum albumin may remain very constant. As serum albumin transudes more easily through an animal membrane, we would expect that it would be more easily affected by an alteration in the blood-pressure than globulin.

IV. *There is no correspondence between the albumin quotient of the blood and of the urine in cases of albuminuria.*

Hoffman (26) has made numerous observations on the proportions of the proteids in the blood serum and in ascitic fluids, and so small was the difference in the two cases as to lead him to conclude that it was "more apparent than real;" and other observers conclude that the quotient in the two fluids is the same.

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[1] Since writing this paper I have observed an extremely interesting case of nephritis where the urine contained globulin in large amount, albumoses, but absolutely no serum albumin.

Estelle (27) concluded, from the simultaneous examination of the blood serum and urine in two cases of albuminuria, that the quotient in the two fluids corresponded exactly. The following are his figures:—

I.

Blood.		Urine.	
Total proteids	=8·41	Total proteids	=1·138
Serum albumin	=3·006	Serum albumin	=0·406
Globulin	=5·404	Globulin	=0·732
Quotient	=0·55	Quotient	=0·55

II.

Total proteids	=5·4	Total proteids	=1·092
Serum albumin	=1·8	Serum albumin	=0·35
Globulin	=3·6	Globulin	=0·742
Quotient	=0·5	Quotient	=0·47

Estelle worked with the magnesium sulphate method, but he was ignorant of the very important fact, that before saturating with magnesium sulphate it was essential to neutralize the urine. There are, it is true, no free acids in the urine, but, as Ott (28), Johannesson (29), and Hofmeister (30) have shown, serum albumin is precipitated by magnesium sulphate in combination with the acid salts of the urine; and again, as Paton (31) points out, Estelle did not correct for the increase in the bulk of the fluid after the addition of the magnesium sulphate. Estelle's results, then, are fallacious, for the globulin is much in excess of what was actually present. Indeed, if we look at his figures in both cases, in both blood and urine, the globulin is largely in excess of the albumin, a condition very rarely, if ever, found in the blood.

Lecorelié and Talamon (32) made one observation which seemed to confirm Estelle's results. Their observation was made by Brandberg's method, and no allowance was made for increase of bulk of the urine on addition of magnesium sulphate, and so error creeps in.

I have been able to make simultaneous analyses of the proteids of the blood and urine in the following cases:—

I. Subacute interstitial nephritis. Blood serum obtained clear, not coloured with hæmoglobin. Proteids estimated by the ammonium sulphate method.

$$\left.\begin{array}{ll}\text{Total proteids} & =4{\cdot}2\\ \text{Serum albumin} & =2{\cdot}8\\ \text{Globulin} & =1{\cdot}4\end{array}\right\}\text{Quotient}=4.$$

Urine obtained simultaneously of a pale colour. Neutral. No deposit. Native proteids. No hæmoglobin; no bile pigments. Granular casts present.

$$\left.\begin{array}{ll}\text{Total proteids} & =0{\cdot}11\\ \text{Serum albumin} & =0{\cdot}10\\ \text{Globulin} & =0{\cdot}01\end{array}\right\}\text{Quotient}=10.$$

II. Case of mania with fever. Cloudy swelling of kidney found post-mortem. Serum obtained quite clear.

$$\left.\begin{array}{ll}\text{Total proteids} & =7{\cdot}6\\ \text{Serum albumin} & =4{\cdot}6\\ \text{Globulin} & =3{\cdot}0\end{array}\right\}\text{Quotient}=1{\cdot}5.$$

Urine, specific gravity 1025; acid; contains native proteids; no hæmoglobin; no sugar. No casts found.

$$\left.\begin{array}{ll}\text{Total proteids} & =0{\cdot}11\\ \text{Serum albumin} & =0{\cdot}09\\ \text{Globulin} & =0{\cdot}02\end{array}\right\}\text{Quotient}=4{\cdot}2.$$

III. Case of delirium tremens. No high temperature; had albumin in urine during maniacal stage, which disappeared during convalescence. Serum obtained clear.

$$\left.\begin{array}{ll}\text{Total proteids} & =8{\cdot}0\\ \text{Serum albumin} & =6{\cdot}2\\ \text{Globulin} & =1{\cdot}8\end{array}\right\}\text{Quotient}=3{\cdot}4.$$

Urine acid; contains native proteids, but no hæmoglobin.

$$\left.\begin{array}{ll}\text{Total proteids} & =0{\cdot}17\\ \text{Serum albumin} & =0{\cdot}10\\ \text{Globulin} & =0{\cdot}07\end{array}\right\}\text{Quotient}=1{\cdot}4.$$

IV. Case of chronic interstitial nephritis. Examined September 25, 1891. Blood obtained by wet cup. Serum very faintly stained with hæmoglobin.

$$\left.\begin{array}{ll}\text{Total proteids} & =4{\cdot}8\\ \text{Serum albumin} & =3{\cdot}6\\ \text{Globulin} & =1{\cdot}2\end{array}\right\}\text{Quotient}=3.$$

Urine acid; contains native proteids, but no hæmoglobin; no casts present.

$$\left.\begin{array}{ll}\text{Total proteids} & =0{\cdot}49\\ \text{Serum albumin} & =0{\cdot}32\\ \text{Globulin} & =0{\cdot}17\end{array}\right\}\text{Quotient}=1{\cdot}8.$$

The simultaneous estimation of the proteids of the blood and urine in these cases shows that there is *no correspondence between the quotient in the blood and that in the urine.* The cases are fairly representative of the various forms of albuminuria.

The results correspond with those of Csatáry (33), whose observations were published after several of mine had been made. He examined ten cases of albuminuria, and in none did he find any correspondence between the proteid quotient of the blood and urine. These combined results must, I think, be taken as conclusive. But it may be urged that serum albumin transudes more easily than globulin, and hence one would expect a larger proportional amount of serum albumin in the urine than in the blood. If this increased proportion always existed, the objection would be very difficult to controvert. My observations show, in Case III., the quotient of the blood serum is 3·4, while that of the urine is 1·4; thus there is a *larger proportion of serum albumin in the blood than in the urine.* In Case IV. the quotient of the serum is 3, that of the urine 1·8.

If the albumin were present as the result of a transudation under physical laws, how can we account for the excessive proportional amount of the serum albumin in the blood to that found in the urine?

V. *The amount of proteids present in the urine is larger in some cases than can be accounted for by a mere transudation.* An examination of pleural or ascitic fluids shows that, as a rule, the amount of proteids present is low, seldom rising above 1 per cent. In some cases of acute and other forms of nephritis the urine turns almost solid on heating,—the native proteids in one case of acute nephritis reaching the enormous amount of 7·5 per cent. This is much higher than is ever found in a transudation.

VI. *Adami has shown, in the dog, that when the blood-pressure had been reduced below* 40 *m.m. Hg. by section of the spinal cord and in the cervical region, and the urinary flow then brought to a standstill, injection of laky blood was succeeded by the appearance of hæmoglobin menisci in the capsule chambers of the glomeruli, though there was no visible contemporaneous secretion of water.* Hence he looked on the glomerular epithelium as "possessing powers of a selective secretory nature."

Comparison of the amount of hæmoglobin in equal quantities of urine and blood serum in dogs in which he had induced hæmoglobinuria, showed that there could be three times as much hæmoglobin in the former as in the latter, while lymph contained from a half to a fourth of the amount in the serum. This he concluded could not be accounted for by simple filtration, but must be the result of the secretory activity of the glomerular epithelium.

If, then, from these facts we must conclude that blood-pressure causing increased or diminished transudation of the two proteids of the blood serum will not account for the presence of albumin in the urine, and for the changes which take place in the amounts of the two proteids in the urine from hour to hour and from day to day, to what are we to look? As regards the last point, the question naturally arises, Will alterations in the proportions of the two proteids in the blood account for the alterations which take place in the urine. This we must answer in the negative. For some time it was supposed that during starvation globulin increased at the expense of the serum albumin (34). Salvioli (35), indeed, obtained this result when working with different animals, but when he worked with the same animal throughout the experiment, and taking the serum first while digesting and afterwards at intervals of six, twenty-four, and forty-eight hours, very little change could be made out in the proportions of the two proteids. The slight change—it was very slight—might show that during hunger a very slight diminution of the serum albumin took place, " but the result might be due to incidental error." We know from Paton's observations that during digestion as compared with the intervening periods there are considerable variations in the proteid excretion, and I have pointed out how large these variations may be from day to day. It is true that in cachectic individuals there is an alteration in the quotient of the blood proteids. Hammarsten (36), as the average of six observations, found the quotient in health to be 1·5. Hoffman (37) found that in cachexia the albumin quotient fell. When it got as low as 1·0 the individual was near death. These variations are slight, and not sufficient to account for the variations in the urine. We may conclude, then, that changes in the proportions of the proteids in the blood serum cannot to any extent account for the changes in the proportions of the proteids in the urine from hour to hour and from day to day. We must, I think, look further for the cause of these changes, and also for the *actual presence of the proteids in the urine.*

Just as Adami has shown that hæmoglobin, which is a proteid, can pass into Bowman's capsule through the vital secretory activity of the glomerular epithelium, so, I think, we must look to the *secretory activity* of the diseased glomerular epithelium as the cause of the albumin present in the urine in cases of albuminuria, and not to the watery part of the urine carrying the proteid along with it through an injured membrane.

What influences the diseased glomerular epithelium is difficult to say. Whether the gland nerve-centres, or the condition of nutrition of the epithelium, is the principal factor in causing variations in the proportions of the two proteids is doubtful. The observation of some cases would lead us to think that a low state of nutrition caused the epithelium to secrete more globulin than when the nutrition was well maintained. Thus, I have seen a case where at the commencement of the disease serum albumin alone was present in the urine. As the disease became more established and the general condition deteriorated, globulin appeared in the urine, and gradually increased in amount till it was passed in as large quantity as the serum albumin. Again, however, I have seen cases which would seem to contradict this conclusion. Thus, in a case of advanced hip-joint disease with waxy disease of the kidneys, liver, spleen, and intestines, and most profound emaciation, I have found globulin present in very small amount, both proportional and total. Thus—

$$\left.\begin{array}{lll}\text{Total proteids} & = 0\cdot49 & \text{per cent.}\\ \text{Serum albumin} & = 0\cdot35 & ,, \quad ,,\\ \text{Globulin} & = 0\cdot14 & ,, \quad ,,\end{array}\right\}\text{Quotient} = 2\cdot5.$$

Whatever may ultimately turn out to be the true cause of the variations which take place in the proportions of the two proteids in the urine, these observations seem to point to the albumin being present rather as the result of a depraved or diseased secretory activity of the glomerular epithelium than as the result of a mechanical transudation or filtration through an injured membrane.

In conclusion, I would wish to express my sincere thanks to the Laboratory Committee of the Royal College of Physicians for permission to carry on this research, and to Dr Noël Paton, their Superintendent, for his constant kindly assistance and many valuable suggestions.

LITERATURE.

1. RIBBERT.—*Centr. für med. Wiss.*, 1879, p. 838. LANGHAUS.—*Virch. Archiv*, vol. lxxvi. p. 85, 1879. WEISSGERBER und PERLS.—*Arch. für expt. Path.*, vol. vi. p. 113.
2. V. WITTICH.—*Virch. Archiv*, vol. x. ZITHEN.—*Zeitschr. für klin. Med.*, vol. i. p. 178.
3. POSNER.—*Virch. Archiv*, vol. lxxix. p. 318.
4. SENATOR.—*Ueber Albuminurie.*
5. BRIDGES ADAMS.—*Hæmoglobin auscheidung in die Niere*, Leipzig, 1880.
6. STOKVIS.—*Journal de Médecine de Bruxelles*, 1867; *Jahresbericht der gessamten Medicin*, 1868.
7. ADAMI.—*Journal of Physiology*, 1885, vol. vi.
8. WITTICH.—*Archiv für mikr. Anat.*, vol. xi. p. 77.
9. CLIRZOWSZEZEWSKI.—*Virch. Archiv*, vol. xxxi. p. 187.
10. SOBERANSKI.—*Virchow's Archiv*, vol. xxxv. p. 158.
11. JACOBI.—*Archiv für expt. Path. und Phar.*, vol. xxix. p. 32.
12. BARTELS.—*Cyclopædia of the Practice of Medicine*, vol. xv.
13. JACOBI.—*Archiv für exper. Pathol. und Pharmacol.*, vol. xxvi. p. 389.
14. J. MUNK.—*Virch. Archiv*, vol. cvii. p. 317.
15. ABELES.—*Wiener Akadem. Sitzungsber.*, lxxxvii., 1883, p. 187.
16. MEYER.—*Zeitschr. für physiol. Heilkunde*, 1844.
17. ROBSON.—*Medico-Chirurgical Transactions*, London, vol. xxvi. p. 37.
18. FRIRICHS.—*Die Brights'che Nierenkrankheit*, 1851, p. 180.
19. LITTEN.—*Centralblatt für die med. Wiss.*, 1880, p. 161.

20. Pichler und Vogt.—*Centr. für innere Medicin*, No. 17, 1894, p. 389.
21. Noël Paton.—*British Medical Journal*, 1889, p. 199.
22. Gottwald.—*Zeitschr. für physiolog. Chemie*, 1880, vol. iv. p. 423.
23. Maguire.—*Lancet*, i., 1886, p. 1063.
24. Werner.—*Deutsch. Archiv für klin. Med.*, No. 46, 1883, p. 666.
25. Byrom Bramwell.—*Atlas of Clinical Medicine*, vol. i. p. 170.
26. Hoffman.—*Archiv für experiment. Path. und Pharma.*, vol. xvi., 1883, p. 135.
27. Estelle.—*Revue de Médecine*, 1880; *Revue Mensuelle*, 1880.
28. Von Ott.—*Prager med. Wochen.*, 1884, No. 16; see *Virchow und Hirsch*, 1886, vol. i.
29. Johannesson.—*Zeitsch. für physiol. Chemie*, vol. ix. p. 310.
30. Hofmeister.—*Zeitschr. für analytische Chemie*, vol. xx. p. 319.
31. Noël Paton.—*British Medical Journal*, July 1890, p. 197.
32. Lecorelié et Talamon.—*Traité de l'albuminurie et de Mal. de Bright*, 1888.
33. Csatáry.—*Deutsch. Archiv für klin. Medicin*, vols. xlvii. and xlviii.
34. Siegel.—*Pflüger's Archiv*, vol. xxxii.
35. Salvioli.—*Du Bois Reymond's Archiv für Physiol.*, Suppliment Band, 1879, p. 272.
36. Hammarsten.—*Zeits. für phys. Chemie*, vol. viii. p. 501.
37. Hoffman.—*Archiv für exper. Pathol. und Pharma.*, vol. xvi., 1883, p. 135.

Part Second.

REVIEWS.

On Failure of Brain Power (Encephalasthenia); its Nature and Treatment. By Julius Althaus, M.D., M.R.C.P. Lond. Fourth Edition, with Twelve Engravings. London: Longmans & Co.: 1894.

Rarely does one see in medical literature so much good matter in so little bulk, such a mastery of facts permeated by thought. Dr Althaus deals with functional failures of the brain following on disease and exhaustion, which sometimes puzzle even experienced physicians, as their symptoms are subtle and varying in appearance. These disorders often do not end in insanity, and have been only studied to any purpose during the last twenty-five years. After considering the causes of failure of brain power, Dr Althaus describes the symptoms, grouping them around the many different centres in the encephalon described by some physiologists, though not admitted by all. Thus angina pectoris is treated as an affection of "the vasomotor centre," anidrosis of "the sudorific centre," rumination and dyspepsia of "the vomiting or gastro-intestinal centre." Asthma is a disorder of "the respiratory centre;" the variety which comes on after taking indigestible food is put down as due to "paresis of the respiratory and inhibitory cardiac centres combined." This has the air of a somewhat too artificial arrangement, but all these affections are treated as varieties of encephalasthenia. We do not object to new words, they are useful to string new descriptions of diseases upon; but what is the use of a long Greek word where a short English word expresses the same meaning? Why not, then, say brain-weakness? By the way, Dr Althaus seems rather hasty in objecting to Guyt's term of aprosexia, which, as he tells us, means want of application; for the Dutch physician uses the word to denote a particular form of drowsiness and hebetude connected with an unhealthy condition of the nasal passages, and this we believe to be a useful clinical form. Dr Althaus gives some striking instances of neurotic inheritance in German princely families with whose history he is acquainted. On the whole, he gives a cheerful prognosis in cases of functional brain failure. As a remedy he assigns much value to arsenic, and mentions some wonderful results from what he calls "cerebrine alpha," —a sterilised extract from the brains of healthy young animals. But he sets the highest value upon electricity in the treatment of this neurosis. "No other agent," Dr Althaus observes, "has such a direct and immediate influence in improving the tone of the brain, and subduing distressing symptoms dependent either upon paresis or hyperæsthesia, as the constant current properly administered." He finds this remedy of especial value in the treatment of morbid fears. Where it fails, he says that it is very often owing to the inefficient and haphazard way in which it is administered.

Our own experience with the galvanic current has not been so successful as to lead us to expect such results, but we can neither claim Dr Althaus' experience in using electricity nor in treating nervous diseases.

Lunatic Asylums; their Organisation and Management. By CHARLES MERCIER, M.B., etc. London: Griffin & Co.: 1894.

DR MERCIER claims to be the first who has treated this subject systematically. It is unlikely that any one should be appointed to the charge of an asylum without bringing with him sufficient experience to be able to dispense with many of the details so profusely given in this book; but men's knowledge is generally unequal, and even those who have a pretty fair acquaintance with asylum management may glean useful pieces of information from this book. It is also calculated to be instructive to assistants commencing asylum life. The author thinks that in many asylums more liberty might still be allowed, and greater play accorded to the individuality of the patient. As a natural consequence, he is against large establishments. His attention seems principally directed to the over-grown asylums about London, and what he calls a small asylum is one that has from 400 to 500 patients. The book goes through all the details of asylum life, buildings, furniture, food, occupation and amusements, and care of patients. In the last chapters he deals with the asylum staff. If we could suspect a vein of humour in Dr Mercier's character, we might take his review of the duties of the chaplain to be a piece of grave banter. The religious views of this gentleman must not be sombre, nor must he be fanatical, nor endued with the spirit of sacerdotalism. His ecclesiastical prejudices must not prevent him taking part in a rubber of whist or a dance. The religious services should be brief, and music introduced at frequent intervals. The main use of the chaplain really is to look after the library. Dr Mercier points out that the difficulty of getting a good supply of books may be overcome to a large extent by a chaplain "who is gifted with the mendicant qualities which are of such service to many of his brethren of the cloth." The directions imparted to the reverend gentleman for repairing worn and torn books occupy about six pages. It is also a part of the chaplain's duty to converse with the patients, read to them, and lead their amusements. He ought also to divert them by describing his own visits to places of amusement outside. He should naturally be the editor of a periodical occupied with asylum news, for, as Dr Mercier sententiously observes, the gratification to the attendants and others of seeing their names in print is very great, and may render them more contented with their lot. The chaplain should also form a museum of natural curiosities, hold evening classes for illiterate patients, and be ready to write letters for them. Any spare time left over may be profitably dedicated to the after-care of the patients who have left the asylum.

Dr Mercier shows much more sensitiveness about the status of assistant medical officers. He observes that: "As a rule, it is the object of the superintendent to secure in his assistant, first of all, the presence of these qualities which will make him a pleasant fellow to mate with; and second, the absence of qualities that will bring him into comparison with the superintendent" himself. Dr Mercier contrasts the wealthy and dignified position of the superintendent with the ill-paid, dependent, and restrained life of his assistant, whose work is of the same, sometimes of better quality, and generally more continuous and greater in amount. Dr Mercier tells us that the unsatisfactory nature of the position, with the remoteness and uncertainty of advancement, keeps away some good men from seeking to be assistants, and disgusts others who have tried it; so that "the active and enterprising men leave the branch, and those who remain to become ultimately superintendents are the unenterprising, the vegetative, and the dull."

As a remedy to those evils, the author proposes an intermediate class of officials, "deputy superintendents," who should have better pay, a house of their own, and leave to marry. We sympathize with the efforts made to better the position of assistants in asylums; but it is likely that the managers may refuse to call into existence a more expensive class of officials out of sheer kindness, so long as they get plenty of applications for the vacancies which they advertise, and it seems likely that the number of the competitors will increase rather than diminish.

There is no room in this book for the medical and scientific knowledge of which Dr Mercier has given proof in other writings; but at any rate he has shown a mature consideration of all the details and difficulties of asylum management.

Inebriety, or Narcomania; its Etiology, Pathology, Treatment, and Jurisprudence. By NORMAN KERR, M.D., F.L.S. Third Edition. London: H. K. Lewis: 1894.

THE text on which this author discourses is, that drunkenness in its chronic form is always a disease. He asks, "Why do these [drunkards] fall? Not because they are greater sinners than their fellows, not because they are worse morally, but because they are weaker physically." Surely this is overdoing the physical theory of the causes of vice and crime. It reminds us of a clever satire called "Erehwon," in which the following method is described for producing a perfect race in body, mind, and morals. Hospitals were used for the treatment of those affected with vice and crime, while prisons or the scaffold awaited those who had mild or severe bodily diseases. We doubt whether the knowledge that drinking alcohol is a disease would help the drunkard more to overcome his craving than the feeling that he was giving way to self-indulgence which he ought to have power to prevent. We are all agreed that there is a form of drinking to excess generally associated with an insane heredity, that lunacy itself may be the cause of drunkenness, and that the abuse of alcohol is the cause of many forms of functional and organic disease; but that habitual drunkenness is a physical disease in itself we decline to admit.

The author goes to a ridiculous extent in describing forms of inebriety. He mentions that stricture cases are often seized, after an operation, with a fierce impulse to intoxication, and places such cases under the head of "Inebriety of Operations." Now we know that one of the most frequent causes of stricture is drunkenness, with its accompaniments.

However we may disagree with Dr Kerr in regard to the physical causes of drunkenness, we are quite at one with him regarding treatment. In acute diseases caused by alcoholism, such as delirium tremens and alcoholic epilepsy, he recommends the instant withdrawal of intoxicants and the avoidance of narcotics, combined with the internal use of *liquor ammoniæ acetatis*, in order to aid the elimination of the alcohol. From our experience, we believe this by far the safest course of treatment.

For chronic drunkards there is no other treatment than confinement in a licensed home, and not in a lunatic asylum. Dr Kerr is right in believing that the presence of drunkards in an asylum has not a good effect on lunatics. Besides, in a large asylum the drunkard can almost always get some drink, either through pity on the part of attendants or by bribes.

The worst fault of this book is its length. The author has no right to inflict on the profession a book of between 700 and 800 pages on inebriety. He ought to be temperate in all things; and if a fourth edition be ever called for, let him remember that his views will be more impressive if stated in a more concise form.

Text-book of Abdominal Surgery: a Clinical Manual for Practitioners and Students. By SKENE KEITH, F.R.C.S. Ed., assisted by GEORGE E. KEITH, M.B., C.M. Edinburgh and London: Young J. Pentland: 1894.

A TEXT-BOOK of abdominal surgery bearing on its title-page the universally esteemed name of Keith is certain of a welcome from the profession. In this case it is not Dr Thomas Keith himself who is the author, but it is his son, and what he says is in great part founded upon the experience of abdominal surgery gained during his seventeen years' association with his distinguished father. Abdominal surgery is such a modern thing that it makes no strain upon the memory to recall the days when crowds of students, and not a few graduates, used to make their way into the Edinburgh Infirmary theatre to see Thomas Keith remove an ovarian tumour. That was, it is needless to add, in the days before the danger to the patient due to the crowds of onlookers was realized. By the way, we have not noticed any statement in the work now under review as to the number of persons that it is safe to allow in the room during the performance of an abdominal section; but we do note, and with thankfulness, the protest against the patient being put upon the operating-table before she is anæsthetized.

With regard to the book itself, it is divided into two sections, the first of which deals with the surgery of the abdomen, and the second with the surgery of the abdomen peculiar to women. In the first section such matters as the examination of the abdomen, tapping, examination of fluids, exploratory incisions, the preparation for an abdominal operation, the operation itself, and the after-treatment, are considered; and then the morbid conditions of peritoneum, stomach, intestine, appendix vermiformis, liver, kidney, and spleen, which call for operative interference, are discussed in detail.

This part of the work contains the general principles of abdominal surgery, and much good and sound advice. The practice, for instance, of giving ice to suck after the operation is condemned, and rightly so. Interesting notes of individual cases are scattered throughout the work, often illustrating in a very forcible way some erroneous detail in management, and emphasizing the necessity for its correction.

The second section of the text-book treats of ovariotomy, hysterectomy, operation for extra-uterine pregnancy, the management of fibroids of the uterus and diseases of the tubes, etc., and forms a very interesting and instructive section indeed. With regard to fibroids, we are not surprised to find hysterectomy depreciated and electricity lauded. The opinions of the elder Keith are well known on these questions. With the former we thoroughly agree, notwithstanding some very strong statements to the contrary recently made by an American operator; but with the latter we confess to a strong measure of scepticism as regards the supposed superiority of the battery over other therapeutic means.

As a work on abdominal surgery this will doubtless rank alongside of Greig Smith's, and possibly one other, as a reliable guide for operators, and as an expression of one side of British theory and practice in the treatment of disease of the abdominal viscera. References, however, to the work of other well-known laparotomists in Edinburgh and elsewhere would have formed, on the one hand, a useful *complement* to the book itself, and, on the other, a graceful *compliment* to these operators.

Handbook of Obstetric Nursing. By F. W. N. HAULTAIN, M.D., F.R.C.P. Ed., and JAMES HAIG FERGUSON, M.D., F.R.C.P. Ed. Second Edition, Revised and Enlarged. Edinburgh and London: Young J. Pentland: 1894.

DRS HAULTAIN and FERGUSON are to be congratulated upon the fact that there has arisen the necessity for the appearance of a second edition of their *Handbook of Obstetric Nursing*. The book has evidently supplied a felt want, and we believe it has supplied it in a most satisfactory way. In this edition a new chapter has been added upon the Management of Pregnancy; it is a short one, for the whole subject may be summarized in the statement, "strictly observe the ordinary laws of health," and remember that what is bad for the non-pregnant is never good for the pregnant woman. The chapter dealing with the vexed question of infant-feeding has been enlarged, and the information it contains is sound; but we should have been glad to have seen it insisted upon that the baby should not be fed between 11 P.M. and 7 A.M.

Night-feeding, if avoided from the very first, is quite unnecessary; for if the infant should wake in the early hours of the morning, simply altering his position and changing his diaper will send him off to sleep again far more surely and satisfactorily than filling his stomach with milk. We must also take exception to the statement on p. 117, that in the second stage of labour "examinations may now be made more frequently (every half-hour);" this is surely not in keeping with the best modern theory and practice.

The book, as a whole, is excellent, and the illustrations, whilst not too many, are good; but we must make an exception with regard to the frontispiece. It is "after Richard," truly, but why in a midwifery manual, and especially in one published in Edinburgh, the gross anatomical inaccuracy of representing the vagina in pregnancy as an open canal should be perpetuated we confess we are at a loss to understand. But this is not, after all, a serious defect in a manual which is otherwise so admirable.

On the Application of suitable Mechanism to a Case of Amputation of both Hands. By F. GUSTAV ERNST, Orthopædic Mechanician to the National Orthopædic Hospital, The Surgical Aid Society, etc., etc. Illustrated by twenty "Ink-Photo" Plates. London: Illustrated and published by Sprague & Co.: 1893.

IT is probably difficult to estimate the deprivation which the loss of two hands would be to anyone living in civilized society. Proverbially we only appreciate the value of our best friends after we have lost them, and although one frequently thinks of this in relation to eyesight or hearing, the loss of two hands is a much rarer example of the same general truth. The special case recorded in the pamphlet was the result of a gunshot injury, and the account of how the patient was enabled to dress and shave himself, to write, and, in fact, to perform for himself most of the usual requirements of modern society, is narrated in a most interesting way.

Great ingenuity has been shown in the adaptation of mechanisms for the purposes in view. Mr Ernst has evidently worked out every detail with the zeal of an enthusiast. The various pieces of apparatus and their mode of use are illustrated by the aid of photography, and the results obtained would seem to leave very little to be desired.

Such cases are fortunately rare; but should one occur, the experience of Mr Ernst would be of great value.

A Manual of Therapeutics. By A. A. STEVENS, A.M., M.D., Lecturer on Terminology, and Instructor in Physical Diagnosis in the University of Pennsylvania, etc. Philadelphia: W. B. Saunders: 1894.

THIS *Manual,* which the author tells us is "prepared especially for students," is not without merit in some particulars, but it is sadly deficient in the Latin, and that notwithstanding the fact that the author is a "Master of Arts." For example, calcii carbonas præcipita*tus*, page 97; again, calcii phosphas præcipita*tus*, page 99; again, Rhamnus purshia*na*, page 109, etc. Dr Saunders is evidently quite at sea regarding the use of capitals in the *specific* names of plants. It is not a book which will ever have a large sale on this side of the Atlantic.

Materia Medica, Pharmacology, and Therapeutics: Inorganic Substances. By CHARLES D. F. PHILLIPS, M.D., LL.D., F.R.S.E., late Lecturer on Materia Medica and Therapeutics at the Westminster Hospital Medical School; late Examiner in the University of Edinburgh. Second Edition. London: J. & A. Churchill: 1894.

WE are glad to see that Dr Phillips has brought out a new edition of his well-known and most valuable work on Materia Medica. The present volume treats of "inorganic substances." The book is excellently arranged, and the information on the various substances brought fully up to date. In some respects the book is too large for the ordinary student, but as a work of reference it has no superior in our language, and ought to be in every physician's library. We hope the work will have the wide circulation which its excellence deserves.

Nouveau Formulaire Magistral précédé d'une notice sur les Hôpitaux de Paris, de généralités sur l'Art de formuler. Par A. BOUCHARDAT, Professeur d'Hygiène, et G. BOUCHARDAT, Professeur de Pharmacie, Paris. Trentième édition. Paris: Félix Alcan: 1894.

THIS is an excellent work, and gives in a small compass a knowledge of the chief medicines used in Paris.

Essentials of Practice of Pharmacy, arranged in the form of Questions and Answers. Prepared especially for Pharmaceutical Students. Second Edition. By LUCIUS E. SAYRE, Ph.G., Professor of Pharmacy and Materia Medica, University of Kansas. Philadelphia: W. B. Saunders: 1894.

THIS will be found a most useful book, not only to pharmaceutical students, for whom it was specially written, but also for medical students.

The Pocket Companion of Dosimetric Medical Practice. By Dr WESTWOOD WILSON. London: Wertheimer, Lea, & Co.: 1893.

WHATEVER use it may be to those who believe in "Dosimetric" medicine, it is of no use to the general medical practitioner.

Wright's Prescription Book. Bristol: John Wright & Co.

THIS is a very convenient book, enabling the prescriber to retain a copy of each prescription with one writing. It is cheap and most useful.

Analyses of Twelve Thousand Prescriptions. Compiled by W. MARTINDALE, F.C.S., Joint Author of "The Extra-Pharmacopœia." London: H. K. Lewis: 1894.

THIS book contains the analyses of "the last 12,000 medical prescriptions dispensed in six pharmacies in typical positions in the United Kingdom—2000 at each centre."

The statistics are very interesting, and contain much valuable information which the British Medical Council should carefully consider in any future edition of the *British Pharmacopœia.*

Andrew Vesalius. By GEORGE MATHESON CULLEN, M.D., M.Ch. Univ. Edin. Dublin: John Falconer: 1894.

THIS scholarly and interesting account of the great anatomist first appeared in the columns of the *Dublin Journal of Medical Science* during several of its monthly issues.

Dr Cullen draws an interesting picture of the great enthusiast in anatomy pursuing his studies and dissections under enormous difficulties,—fighting the battle of freedom from the pious opinions of Galen which held the schools of that day. Some of the old ideas about Vesalius and his conflicts with the Inquisition are contradicted. A copious bibliography is given. The work must have cost much time and labour.

The Year-Book of Treatment for 1894. London: Cassell & Co., Limited: 1894.

THE names of the editors ensure that the work will be satisfactorily accomplished, and a careful examination of the contents shows that they have succeeded in giving a remarkably good *résumé* of the last year's progress in medicine. It is by no means easy to make a serviceable abstract of this progress, but the collaborators have done exceedingly well.

Official Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Eleventh Annual Issue. London: C. Griffin & Co.: 1894.

THIS useful volume still continues to supply a distinct advantage to authors. It gives the lists of papers read before the various Societies in the kingdom. We notice that the Edinburgh Obstetrical Society sends no list,—a mistake, we think, as other obstetrical societies give full lists.

The book is almost indispensable for writers.

Transactions of the Obstetrical Society of London. Vol. XXXV., for the year 1893. London: 1894.

THE valuable volume of the London Obstetrical Society's *Transactions* for the past year is rather late in appearing, but the cause is doubtless to be found in the excellent general index to Vols. XVI. to XXXII., which accompanies it. As usual, the annual volume contains many interesting and valuable papers dealing with obstetrical and gynecological subjects. The contributions of the past year seem to have been of a specially practical nature. Dr Arthur Giles has three capital papers on the Longings of Pregnant Women, the Lochia, and the Etiology of the Sickness of Pregnancy,—papers which, whilst they treat of what might be called threadbare subjects, are nevertheless full of interest. Other eminently practical contributions are those on the Frequency of the Local Symptoms associated with Backward Displacement of the Uterus, by Dr Herman; on Cases of Extra-uterine Gestation, by Drs Cullingworth, Phillips, and Sinclair Stevenson; on Fever in Childbed, by Dr Boxall; and on Puerperal Diseases, by Dr Braxton Hicks. There are also numerous short notices of interesting specimens and fœtal monstrosities by Drs Wheaton, Amand Routh, Doran, and Eden. At the meeting on November 1st, Dr Lewers showed the patient on whom he had performed symphysiotomy in the preceding February.

The Quarterly Medical Journal for Yorkshire and adjoining Counties. Vol. II., Part iv. Edited for the Promoters by SIMEON SNELL, F.R.S.E., etc. July 1894.

THIS enterprising young journal continues to provide much excellent matter for its readers,—original articles, well selected abstracts, and discriminating reviews. This number contains a short article by Mr Victor Horsley, of extreme value, on the Mode of Death in Cerebral Compression, and its Prevention. Certain cases of cerebral hæmorrhage and cerebral tumour, and of depressed fracture, die from failure of the respiration, and not, as is so often surmised, from failure of the heart. Such a case being diagnosed correctly in life, and when dissolution is apparently imminent, it is the duty of the surgeon, as rapidly and as freely as possible, to expose the dura mater, and if necessary open it to relieve tension. Three cases in which this was successfully done when the patient was apparently *in extremis* are graphically recorded, and the results were most satisfactory. The paper is written with absolute clearness, and is of extreme value to the operating surgeon.

Transactions of the American Surgical Association. Vol. XI., 1893. Edited by DE FOREST WILLARD, M.D., Recorder of the Association.

THIS attractive volume contains the papers read before the

Association at its last meeting. While most of them are already familiar to readers of the *Annals of Surgery*, they are none the less welcome in their present form, for, with few exceptions, they rank as valuable contributions to surgical literature. The list of authors includes the names of many who have deservedly won a great reputation both in this country and on the Continent. We venture to congratulate Dr Willard, the Recorder of the Association, on the success which has attended his labours as editor of the *Transactions.*

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIII.—MEETING X.

Wednesday, 6th June 1894.—Dr CLOUSTON, *President, in the Chair.*

I. ELECTION OF MEMBERS.

The following gentlemen were elected Ordinary Members of the Society:—C. E. Douglas, M.D., Cupar, Fife; William Fraser Wright, M.B., C.M., Bonnington Mount, Ferry Road, Leith.

II. EXHIBITION OF PATIENTS.

1. *Dr James Carmichael* showed a little girl, J. B., aged 1 year and 5 months, the subject of PLEURITIS WITH PURULENT EFFUSION TREATED BY ASPIRATION. She was admitted into hospital on the 23rd October, and dismissed cured on the 24th December. The previous history showed that ten months ago she had suffered from measles, from which she apparently made a good recovery. About five weeks before admission she began to show signs of weakness and slight cough. On admission the child was pale and feeble and out of condition. The physical signs of fluid on her right side were well marked, and the exploring needle withdrew thick pus. The pleura was then aspirated, and 12 ounces of pus removed. Two days after, on the 25th inst., 3 ounces of pus were removed. The child showed a steady improvement, both as regards her general condition and the physical signs. Nothing further was done till the 30th inst., when 4 ounces of pus were removed. On November 2nd, 3 ounces of pus were removed. On November 4th, it was decided to drain the pleural sac. On incision no pus escaped; the wound was closed, and healed by first intention. On November 9th, aspiration was tried, and 2½ ounces of pus obtained. Several other explorations were subsequently made with the hypo-

dermic needle, and no pus discovered. She made an uninterruptedly good recovery, and was dismissed December 24th, two months after admission. On 12th May she returned for inspection, and no difference on the physical signs on the two sides of the chest could be made out. In vol. i. of the *Edinburgh Hospital Reports*, out of 24 cases of purulent effusion he had recorded 5 cases as cured by aspiration. This was the largest purulent effusion he had met with cured by aspiration alone. It had always been his practice in purulent effusions to aspirate in the first instance, as thereby important information was obtained as to the nature and amount of the fluid. Two or three days after, aspiration is again performed, and if there is any great amount of fluid the pleura is drained. In this case the small amount of pus obtained at the second aspiration led him to delay drainage, with the result now detailed. As the entire amount of pus is never removed by aspiration, and there is always a certain amount of re-accumulation, it follows that the serous cavity is able to dispose of the residual pus, a fact which is easily accounted for when the formation of the large pleural lymph sac is taken into account.

2. *Dr Norman Walker* showed two cases of RODENT ULCER after operation.

3. *Mr A. G. Miller* showed three cases of EXCISION OF THE WRIST BY WATSON'S METHOD.

4. *Dr Logan Turner* showed two cases exemplifying operation for DISPLACEMENT OF THE SEMILUNAR CARTILAGE.

III. EXHIBITION OF SPECIMENS.

1. *Dr Edward Carmichael* showed an ANEURISM OF THE AORTA WITH RUPTURE INTO THE RIGHT VENTRICLE.

2. *Dr Burn Murdoch* showed a specimen of HYPERKERATOSIS OF THE FILIFORM PAPILLÆ OF THE TONGUE, and read the following notice of the case:—The patient was 41 years of age. He sought advice on May 15, 1894, on account of a sebaceous cyst below the angle of the jaw, which had existed for many years. When under treatment for this he mentioned casually that there was something peculiar on the back of his tongue. On inspecting the tongue a dark raised growth was seen far back, ⅝ of an inch wide and about 1½ long; it was about ¼ of an inch in height. It caused no pain or annoyance, and would not have been detected had the patient not accidentally seen it, about two months before the time of his visit. It was fairly hard when touched, and gave to the finger the impression of a warty growth. On May 22, 1894, the tongue was drawn far forward and inspected in a good light. The growth was seen to be composed of numerous fibres, resembling hairs and their roots. The word "hairy" at once suggested itself as most descriptive of the condition. On applying to the edge of the growth a pair of forceps some small fibres came away,

still more closely resembling hairs and their roots. The whole growth was pulled away piecemeal by forceps, and the base of the part scraped with a small spoon. The structure was immediately sent to Dr Robertson for examination, to whom I am indebted for the pathological notes on the growth. I may mention that patient was an unusually heavy smoker, and was also in the habit of using red gum lozenges freely, which probably accounts for the colour mentioned in Dr Robertson's report.

An interesting account of the affection, with references to the literature on the subject, will be found in the *Monatsschrift für Ohrenheilkunde sowie für Kehlkopf-, Nasen-, Rachen-Krankheiten*, No. 28, Berlin, April 1894. In the article referred to the affection is mentioned as apparently being more common in heavy smokers than in others.

Dr W. F. Robertson has supplied the following Pathological Report on the specimen:—The growth from the above case, which was handed to me for examination by Dr Burn Murdoch, presented the following characters:—The several pieces together weighed about thirty grains. To the naked eye they appeared to consist of slightly interlacing bundles of coarse threads of a white or brown colour. Many of these threads were fully three-quarters of an inch in length, though the majority of them were much shorter. They were surrounded by tenacious mucus and débris which had a distinctly pink tinge. Under the microscope some of the threads were seen to be made up of two or more finer filaments lying side by side. Others consisted of single filaments. There was no distinct evidence of the former appearance being due to branching. Each thread was entirely composed of extremely large thin epithelial scales. In the centre of a thread these scales were closely packed together, but at the edges they tended to be separated from each other, and had an imbricated arrangement, giving an appearance like that of the stem of a plant closely set with bracts. They stained yellow with picrocarmine, and had no nucleus. Lying between them there could be distinctly seen, isolated or in rows, clear rounded bodies about half the size of a red blood-corpuscle. These were rendered more distinct by treatment with caustic potash, and were probably fungi. The mucus surrounding the threads contained numerous epithelial scales, abundant round cells, clear rounded bodies like those seen within the threads, and much granular débris. Most of these detached epithelial scales resembled those composing the fully-developed threads, from which they had doubtless been shed, but others presented a deeply-stained nucleus in the carmine preparations, and probably were derived from near the roots of the growth, or from the normal surface of the tongue. In unstained preparations much of the granular débris was seen to be of a bright pink colour. The case was evidently an example of the rare condition to which the names "Black Hairy Tongue" and "Hyperkeratosis of the Filiform Papillæ of the

Tongue" have been given. Several cases have now been described in various medical journals, chiefly on the Continent and in America, and Wallerand has written a monograph on the subject (*Contribution à l'étude de l'étiologie et de la pathogénie de la langue noir pileuse*, Paris, 1890). Ziegler, in the last edition of his *Text-book of Pathological Anatomy* (German edition, vol. ii. p. 480), gives the following account of the condition, and appends a list of the papers that have appeared bearing upon it:—"In rare cases hair or bristle-like structures develop over the filiform papillæ of the tongue by pathological growth and horny transformation of the epithelium. These assume a colour varying from brown to black, owing to diffuse staining of the cells which are undergoing horny transformation, and thus they constitute a change which may be described as black hairy tongue (*schwarze Haarzunge*). According to investigations by Dessoir, Raynaud, Dinkler, and Brosin, there often lie in the neighbourhood of the cornified epithelial filaments abundant bacteria and filamentous fungi, though these are not the cause of the peculiar hyperkeratosis (*hyperkeratose*). The change may subsist only a short time, or may last many years." Bearing upon this point, an important paper, to which our attention has kindly been directed by Dr M'Bride, appeared in the *Monats. f. Ohrenheilk. sow. f. Kehlk.-, Nas.-, Rachen-Krankh.* for April last, by Sendziak ("Beitrag zur Aetiologie der sogen. schwarzen Zunge"). He made a bacteriological examination of two cases, and succeeded in growing from both, on bread paste, a special fungus. This organism was identical with that of which cultivations were obtained shortly before by two Polish observers (Ciaglinski and Hewelke) from a similar case, and which was regarded by them as being the *mucor niger*. All of these observers maintain that the condition is due to the presence of this fungus. Sendziak appears to hold the opinion that black tongue, unaccompanied by any hypertrophy of the papillæ, is really the same disease, and that the hair-like growth is a secondary and non-essential accompaniment. If this view is correct, the disease must be less rare than has been supposed.

3. *Dr W. Allan Jamieson* showed a SOAP OF RESORCIN AND SALICYLIC ACID.

IV. DEMONSTRATION.

Dr Alexander Bruce gave a Lantern Demonstration on preparations from a case of SYRINGOMYELIA.

Dr Byrom Bramwell showed with the lantern some MICROSCOPIC SPECIMENS from a similar case. From top to botton in the centre of the cord there were large masses of gliomatous tissue. They broke down in the process of hardening, so as to form a cavity. He also showed microscopic preparations of spinal cords from two ordinary cases of myelitis presenting small cavities surrounded by a membrane. It had been denied that these were formed in any case of myelitis, but he held that the specimens he showed demonstrated that the excavating myelitis of French writers did occur.

V. ORIGINAL COMMUNICATIONS.

1. *Prof. Struthers* read his paper on SEPARATE ACROMION PROCESS SIMULATING FRACTURE, which will appear in a future number of this Journal.

Mr Joseph Bell said that he thought Prof. Struthers had scored a very distinct point by bringing out how common it was that the terminal portion of the acromion only had separated. He thought that fracture of the acromion was not common. It was common, however, to have fracture of the external end of the clavicle. Thinking over the cases he had seen, he could recall one in which he thought that he had not succeeded in curing a fracture of the acromion, but the patient was not a penny the worse. No doubt it was a case of separation of the terminal end of the acromion.

Dr Ronaldson said that he had seen two cases in father and child of separate acromion process on both sides. He believed that when it was congenital it would always be found on both sides.

Mr David Wallace said that the subject was one that had interested him and others in the surgical department at the University for some time. Prof. Chiene happened to possess at least three, if not four specimens of the condition. It had been pointed out for a long while that fracture of the acromion process was rare, and it had always been referred to in the books as one of the instances where a persistent epiphysis might simulate fracture. Arbuthnot Lane said that, examining in the dissecting-rooms for fracture, he had found that fractures of the acromion process were the most common in the body. They were probably really examples of the condition to which Prof. Struthers had alluded—persistent epiphysis. With regard to the diagnosis between fracture of the acromion and persistent epiphysis, in the former they would get crepitus. Further, as Hamilton pointed out, in fracture of the acromion they would have displacement downwards of the fractured portion by the fibres of the deltoid attached to it. In the specimens in the Surgical Museum there was evidence of chronic rheumatoid arthritis, but this was due probably simply to the too free movement of the head of the humerus upon the under surface of the acromion process, because the osteophytic projection and the so-called porcellanous deposit, which was really simply a burnishing of the bone, was chiefly situated on the under surface. The complete destruction of the long tendon of the biceps to which Prof. Struthers had referred was a further marked evidence in support of this view. Mr Wallace had seen two such cases.

2. *Dr A. Logan Turner* read his paper on DISPLACEMENTS OF

THE SEMILUNAR CARTILAGES OF THE KNEE JOINT,[1] of which the following is an abstract:—

Dr Turner proceeded to point out what he considered were the reasons for the more frequent displacement of the internal semilunar cartilage.

1*st.* The greater fixation of this cartilage, as evidenced by the greater separation of its terminal points of attachment, the short, firm coronary ligaments throughout the whole extent of its convex margin, and a strong fibrous union with the internal lateral ligament of the joint. The external semilunar cartilage was more movable from the closer approximation of its terminal points of attachments, from a separation of a portion of its convex margin from the capsule by the tendon of the popliteus muscle, and being anteriorly more in the centre of the joint, union with the capsule is here also looser, and from the absence of any firm union with the external lateral ligament of the joint.

He further demonstrated the use of the transverse ligament of the joint as an additional means of attachment of the external semilunar cartilage, because in rotation inwards of the leg at the knee, during which movement this cartilage had a tendency to slip backwards and inwards, that ligament was rendered tense, and thus acted as a restraining force, while in external rotation, when the internal semilunar cartilage tended to slip, it was slack. This ligament varies in its development and exact attachments, and is frequently absent.

The greater the fixation of the semilunar cartilage the greater the liability to its attachment being strained in the movements of rotation at the knee, and, consequently, the greater the tendency to stretching or actual tearing of them.

2*nd.* External rotation of the leg at the knee joint can be carried out to a greater extent than inward rotation; consequently the attachments of the internal semilunar cartilage can be subjected to a greater strain than those of the external. These movements can only be produced in flexion of the joint. The internal lateral ligament checks further external rotation, the anterior crucial ligament checks internal rotation.

3*rd.* The ordinary position of the leg in walking and running lends itself to the production of more frequent strain upon the coronary ligaments of the internal semilunar cartilage, because the position is one in which the toes and foot are naturally turned somewhat outwards, so that any force applied to these parts will be more readily received upon the inner aspect of the foot, so that a sudden and forcible rotation outwards of the tibia at the knee might take place.

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[1] The paper was illustrated by a series of lantern slides made from photographs of dissected knee joints to demonstrate certain points in the anatomy and mechanism of the joint. A number of semilunar cartilages which had been removed from the knees of patients were shown in the same way.

Dr Turner then went on to explain how a knee joint might become "predisposed" to such a lesion in certain occupations which entailed much kneeling. Out of 29 cases which had been operated upon by Prof. Annandale, and upon an examination of which the writer based his remarks, 13 were miners, 1 a gardener, and 1 a domestic servant. The occupation in all these required a considerable amount of prolonged and varying flexion of the knee. In flexion of the joint, the semilunar cartilages glide backwards upon the head of the tibia, and during this movement the anterior part of their coronary attachments are put on the stretch, and thus may become weakened. Statistics show that these cartilages are most frequently displaced anteriorly.

In this series of 29 cases, 24 were those in which the internal semilunar was displaced, in 2 the external; in 3 the cartilage was not specified.

The displacements might be divided into two groups: *1st.* Where there is abnormal mobility of the cartilage from relaxation or stretching of its coronary attachments. *2nd.* Where there is actual detachment of the cartilage in whole or in part, from complete or partial tearing of its coronary ligaments.

The symptoms and diagnosis of those old-standing cases, in which more or less frequent recurrence of the displacement took place, were then described. Some stress was laid upon the necessity of getting the history of an initial injury, as an aid in diagnosis. Locking of the joint was an important symptom, though not always occurring in cases of displaced semilunar cartilage. It might be a symptom of loose body, hypertrophied infra-patellar pad of fat, pedunculated body from synovial membrane or tumour, if situated where wedging of these between the articular surfaces of the bones could take place.

If the patient stated that he saw or felt something coming out of the joint, this body always appeared at the same spot in the case of the displaced semilunar cartilage, as contrasted with the loose body which appeared at different parts of the joint.

The seat of the pain described by the patient, as also elicited by the surgeon on pressure, must be located to the interval between the femur and tibia on the inner or outer side of the joint as the case might be, and not upon the bones themselves, thus differentiating between displaced cartilage and periostitis and ostitis of these bones from some cause.

The treatment carried out in these 29 cases had been either that of stitching the displaced meniscus into position, or of its removal, the latter having been most frequently employed, viz., in 21 cases, the remaining 8 having been stitched.

Highly satisfactory results were obtained by both methods of treatment. In all save one, a most useful joint resulted. Letters were read from patients whose semilunar cartilages had been stitched or removed at different periods during the last ten years, indicating no recurrence of the previous symptoms, absence of pain, stiffness and locking, and in all a return to their former occupation, and in one or two football and cycling had been resumed.

Mr Joseph Bell said that they might well congratulate themselves on having such an admirable paper brought before them, and also Mr Annandale in having the magnificent work he had done brought so carefully and well before the Society. Mr Annandale had taken an absolutely first place in the whole subject of interarticular knee joint disease, and his work had reflected great honour upon the Edinburgh School of Medicine. He also congratulated Sir William Turner, for he might well be proud of what he had seen done that day. He wished just to make one *caveat* regarding Dr Turner's paper. The operation described was not entirely devoid of danger, and he did not want every practitioner to think that it was necessary to open into every knee joint that had a loose body in it without counting the cost.

Prof. Struthers said it was surprising to him to see the progress surgery had made. To have done this sort of thing in his days would have led to an action of there was no saying what. He could almost imagine that Dr Turner must have got access to some of the anatomical specimens in his drawers. He wished to express the satisfaction with which he had listened to the paper, and to join in congratulations which had been offered by Mr Bell.

Prof. Annandale said that he need scarcely state that he had listened to Dr Turner's paper with peculiar pleasure, and also some feeling of pride. It had been a great encouragement to him to offer clinical material to his younger friends, because it was an example of how such material might be worked out. He had first been led to the subject entirely from a clinical point of view. He had not troubled himself much about the causes of these displacements nor the special anatomy of the knee joint, but he had found from clinical experience that the semilunar cartilages, and especially the internal one, got displaced, and that such displacements were not relieved by bandaging. In the first case he operated upon he found the internal cartilage separated from its attachments, and doubled up. He stitched it in position, and the result was so satisfactory that it naturally led him to persevere. He agreed with Mr Bell in the word of caution which he had given. There must be some risk in the operation. He, however, recommended it only in cases in which all other methods of treatment had failed, and in which the condition was really giving rise to such trouble that it made the patient's life a worry, or prevented a working man carrying on his occupation. No form of apparatus would relieve the symptoms produced by a loose internal semilunar cartilage which was displaced inwards. The only real treatment in such a case was operation. In a certain number of cases there was a difficulty in making an exact diagnosis.

There were many conditions which simulated displaced internal semilunar cartilage, such as growths from the synovial membrane, tumours, and collections of fat in the joints. In such cases it was sometimes absolutely necessary to cut into the joint in order to find out what was really wrong.

Sir William Turner remarked that he need scarcely say that the way in which the Society had received his son's paper had given him very great pleasure. He had been particularly impressed with the admirable way in which the lantern served for the purposes of anatomical demonstration, not merely for bringing out microscopical appearances, but for displaying the larger and coarser relations of structure. Dr Scott Lang's paper on this subject had been referred to. He had a vivid recollection of reading that extremely able thesis many years ago, and of the admirably philosophic way in which the structure, movements, and relations of the knee joint and its cartilages were there entered into.

Mr J. M. Cotterill said he wished to add a word of thanks to Dr Turner for his paper. He well knew how much pains had been taken over it. He had a special reason for being interested in the subject, for he had once dislocated his semilunar cartilage himself. He did not have an operation done, but by dint of lying up for eight or nine weeks had got firm union. He was interested, again, because he was in a sense the occasion of Dr Scott Lang's thesis. In 1877 he happened to go into Stamford Infirmary, where Dr Newman directed his attention to a case of displaced semilunar cartilage, and showed him how to reduce it. After coming back to Edinburgh he went to the dissecting-rooms and tried to make out how the various dislocations of the internal and external cartilages were reduced by the now well-known movements. It was only after that time that these were taught in the Edinburgh School. Shortly afterwards Dr Scott Lang dislocated his internal semilunar cartilage while playing football. Mr Cotterill reduced the cartilage to its proper position, and Dr Scott Lang was very much struck with the immediate cessation of the pain. It was after this that Dr Scott Lang set himself to the elucidation of the subject. Dr Turner had referred to the infra-synovial pad of fat. In one case upon which he had operated on account of symptoms of displacement of the internal semilunar cartilage, he found nothing wrong with the cartilage, but the synovial pad of fat was very much thickened by old inflammatory mischief. He removed it, and the patient recovered. He agreed with Dr Turner in saying that in the large majority of cases removal was more satisfactory than stitching, because the after-treatment was less tedious, and the result was more certain.

Dr Turner, in replying, said he quite agreed with Mr Bell regarding the care one should take in operating. Why he had spoken in such easy terms of the operation was because he was merely giving the results of a series of cases which had, on the whole, been most successful. He did not refer to palliative treatment at all, because he had had no experience of it. He would have liked Mr Cotterill to have told them something about the question of injury. He believed that his semilunar cartilage was dislocated without any evident injury.

The President said he had to convey the sense of the Society's obligation to Dr Turner for his paper, and to express the congratulations, which were universal. They must all have noticed the extreme lucidity with which the paper was expressed.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LV.—MEETING VIII.

Wednesday, 11th July 1894.—Dr A. H. FREELAND BARBOUR, *President, in the Chair.*

I. *Dr J. Stuart Nairne*, Glasgow, showed specimens illustrative of early OVARIAN and TUBAL DISEASE.

II. *Dr Felkin* showed a CAST OF UTERUS, and read the following description:—Mrs B. sent for me on the 30th May; she had just arrived from the south. She complained of purging with great pain, great pain on passing water, and much abdominal pain. No cause could be elicited. The urine contained pus, blood, and a large amount of sugar. The patient is a nervous woman, aged 39; she has been married to her second husband for six months. Four years ago she had a miscarriage at about the second month. Has always been remarkably regular. She ought to have been unwell ten days ago. On examination, the abdomen was found to be distended and very painful to the touch, especially over the pubes. The labia were œdematous, tense, and painful; the finger could hardly enter the vagina. The anus was surrounded by a dusky pink ring. I was at a loss to know what gave rise to those symptoms till I found the label I now pass round, and seeing that there was no chemist's name on it, my suspicions were awakened, and on definite inquiry found that the patient, dreading that she was pregnant, had taken, on the 26th May, one shilling's worth of the powder, which is composed of equal parts of aloes and cannella. No result following, the next day she took two large seidlitz powders, and the next day another shilling's worth of the powder. She told me that the pain and purging had been very great. On June 2nd she passed one of the casts, and on June 4th the second. The bladder gave considerable trouble, but she made a good recovery. I think that the case is interesting in many ways; and as the preparation my patient used is, I hear, not commonly employed for such purposes in Scotland, I ventured to bring it under the notice of the Fellows of the Society.

III. *Dr Brewis* showed a FIBROID UTERUS AND PLACENTA removed by HYSTERECTOMY.

IV. *Dr Fothergill* showed, for *Prof. Simpson*, an early EXTRA-UTERINE GESTATION and a small PAROVARIAN CYST.

V. *Dr Benjamin D. C. Bell* communicated the following CASE OF RETAINED MENSES, WITH PERFORATION OF BLADDER:—

Feb. 28, 1888.—L. M., female, aged 26 years, unmarried, never before pregnant, sent into hospital, by midwife thought to be pregnant. Menstruation always very scanty, not more than a few drops at each period; abdomen swollen size of six months' pregnancy; hectic; night sweats. Temperature: morning, 100° F.; evening, 102° F. Weight, 7 st. At times paroxysms of abdominal pain came on; hence the idea of the midwife, who first saw her in a dark box-bed in a bothy, that she was in labour. On making examination per vaginam, the hymen was found entire (with the exception of a minute perforation) and of great firmness. The *meatus urinarius* was very patulous, admitting easily the forefinger. Pus was oozing from the meatus.

Diagnosis: Retained menses, distending enormously the vagina, pushing up the uterus; pressure of retained menses had caused perforation of the bladder wall, hence causing menses to become septic, causing hectic fever.

Treatment.—March 16.—An incision was made with knife into hymen, which was so thick that, after entering the blade some 2 inches and getting no pus, a curved trocar and canula was substituted. On introducing this some 3 inches, and on withdrawing the trocar, out gushed the most vile-smelling pus; three pints were removed in this way. After washing out the vagina daily with weak carbolic lotion, the temperature became normal in ten days. The opening made in the hymen was now dilated daily till it could admit a bougie 3 inches in circumference. Owing to the swollen condition of the vaginal walls, no os uteri was made out up till the time she left for her home on June 16th, when she had menstruated normally through the natural passages, and no pus coming per urethra. Weight in these four months had increased to 10 st., being an increase of 3 st. in four months.

After-history.—Oct. 25, 1889.—Above patient called to report herself as being in perfect health, with the exception of slight bladder irritation. On examination, vagina found normal, with the exception of small dimple on anterior wall, through which a drop of menstrual fluid now and then finds its way into bladder. Menstruation otherwise normal. Uterus normal.

June 1890.—Patient sent in from an island twenty miles off; thought to be by the "midwife" in same condition as in Feb. 1888; but as patient was looking the picture of health (with the exception of an abdominal swelling), this theory was out of the question. On examination, found her six months pregnant, her sweetheart having had illicit connexion with her at times, dating as far back as early in 1887, so accounting for the patulous condition of the meatus urinarius noted at the first examination on Feb. 28, 1888.

Sept. 1890.—Patient delivered of a still-born male child; made a good recovery. At this date (May 1894) is in perfect health.

VI. *Dr E. H. Lawrence Oliphant*, Glasgow, read the following

CASE OF OCCLUSION OF THE VAGINA IN A PRIMIPARA, OBSTRUCTING LABOUR:—

Early in January of this year I received a message by telephone from my house-surgeon informing me that he had admitted to the hospital a patient brought in from the country. She had been a considerable time in labour, but though the membranes were said to have ruptured thirty-six hours previously, he was unable to find the os. As usual in an emergency, the telephone was working badly, and I should have understood that he could not *reach* the os. I had some time previously been troubled by a case in which the os uteri would admit no more than a probe after the woman had been three days in labour; but on bringing her into hospital with the intention of incising the cervix, I found that the hot bath or the chloroform, or both, opened up the os rapidly, and the labour had terminated shortly after. Accordingly, in the case before us, I told the house-surgeon to try the effect of chloroform, and ring me up again if it failed.

Shortly after, a cab came for me, as the telephone could not be got to work at all. On reaching hospital I found that the vagina was obstructed by a diaphragm through which a sound only could be passed, that the discharge was offensive in odour, and that she had been brought into town by the medical man who accompanied her with a view to delivery by Cæsarean section. Unable to obtain a bed at the nursing institution, he had brought her to hospital.

I satisfied myself by examination that both bladder and rectum were not dragged in front of the presenting part, which abdominal palpation showed to be the head. Accordingly, I proposed by incision and Barnes's bags to dilate the minute opening in the diaphragm; but though I pointed out that even in the event—which was unlikely—of having to revert to abdominal section, it would be essential to have free drainage per vaginam as a preliminary, the doctor who had brought her in was so urgent on the risks of tearing into rectum and bladder, that I decided to ask my friend Dr Wm. Reid to see the case with me.

By the time he came the parts had so far softened as to allow the finger to pass through the diaphragm and reach the cervix. The os uteri was found to be about the size of half a crown, and the lips were free from the diaphragm, except posteriorly, where the cervix and diaphragm combined to obliterate the posterior fornix.

Dr Reid now advised simple expectancy, to allow the os to open and let the head itself dilate the now softening diaphragm. About twenty hours after I first saw her the head was resting on what felt now like an elastic ring in the vaginal walls. It caused little obstruction to delivery by forceps, but I thought it advisable to make a few minute incisions on each side to obviate any risk of deep tearing in the direction of bladder or rectum.

On dismissal a fortnight later, the posterior lip of the cervix was found to be adherent to the posterior vaginal wall. Otherwise no trace of the diaphragm was to be felt.

The patient had never suffered any injury to the vagina, and had never had any symptoms to draw attention to the vagina, though she had suffered from scarlet fever in childhood, so it is possible that the obstruction may have been congenital.

I have thought this case worth bringing before the Fellows as an example of the extent to which stretching of the soft parts may go, —an extent apparently not always appreciated duly, as is evidenced by the more heroic treatment advocated in this case.

VII. *Dr J. G. Havelock*, Montrose, read the following paper on AN EPIDEMIC OF RELIGIOUS MANIA ORIGINATING FROM A CASE OF SPURIOUS PREGNANCY:—

Young unmarried women of a hysterical temperament, after illicit intercourse not infrequently closely simulate the symptoms of pregnancy, and no harm results; but an outbreak of religious excitement in eleven persons terminating in acute mania, which followed on such a case, is perhaps worthy of record.

In a small country town there resides a family of well-to-do artizans with a history free from any trace of insanity. The parents are in the prime of life, while their four sons and five daughters are adolescents. The favourite daughter, a shop assistant in a neighbouring city, at the beginning of this year falling into bad company was seduced, and soon afterwards, alarmed at the suppression of her menstruation, consulted a medical man, who suggested the possibility of pregnancy.

Returning to her home in a state of great mental perturbation, she locked herself into her bedroom for several hours. When interrupted by her friends, she was found to be in a state of religious ecstasy, declaring that she had communed with God, who had revealed to her that she was about to die, and that Christ would appear to receive her into His arms.

Moved by her earnest protestations, the family gathered round the bedside and sent off for her father and brothers, who were working in neighbouring towns; and, influenced by the contagion of her example, began also to engage in prayer and anticipate the immediate coming of Christ.

When the father arrived on the scene he found the whole family in a state of great religious excitement. His house had been divided by them into a part they called "Heaven" and a part called "Hell;" the mother, who did not completely fall in with their views, having, of course, been consigned to the latter division.

Attempts by the parents to reason with and control their children were unavailing; unable to stem the torrent, the father and mother were soon as excited as the rest. For several days matters went on in this way: little food was taken, there was no sound sleep, day and night were spent in religious exercises in preparation for the immediate coming of Christ. The mental symptoms in all consisted of a state of ecstasy with hallucinations of sight and hearing, and an overpowering desire to pray and preach.

At the end of a week the father came to his senses, and made strong efforts to induce his family to resume their ordinary mode of life. During an altercation which ensued, the eldest son jumped through the window in a semi-nude state, followed closely by the daughter who had been the originator of the mischief. Both were at once arrested by the police, and, having been certified to be insane, were consigned to the nearest asylum.

On admission, the male patient was found to be a well-developed muscular man, with no evidence of bodily disorder. He was wildly excited, gesticulating and shouting in an incoherent way, with hallucinations of sight and hearing. During the first week he did not converse rationally, had well-marked hallucinations, and was very restless and noisy at night. Improvement then rapidly set in, and at the end of a fortnight he was discharged recovered.

The female patient showed very similar mental symptoms. She, however, was more coherent, and gave a rambling account of her seduction, always winding up with "But my sin is forgiven me; what man put into me God has taken out of me." She had many of the signs of pregnancy,—*e.g.*, amenorrhœa of some months' duration, a milky fluid could be expressed from the enlarged breasts, and the areolæ were altered. In the course of a few months, coincident with an improvement in the mental condition, these spurious signs of pregnancy disappeared.

The remaining members of the family, sobered by the removal of the ringleaders, soon resumed their ordinary way of life, and have remained well since.

Remarks.—The history of this case is of considerable interest when we compare it with the origin of the outbreaks of epidemic insanity occurring on the continent of Europe during the Middle Ages. For instance, we read that in 1260 a boy in Perugia prophesied a great calamity, and thence arose the famous epidemics of *Flagellants* and *Scourgers* which spread throughout Europe. More recently, in Sweden (1841–42), there was a well-marked epidemic of *Religious Ecstasy*, which affected a large number of the country people in the recesses of the kingdom, and was attributed to poverty and the action of fanatical excitement. Modern civilisation has rendered widespread epidemics of insanity almost impossible. The fanatic of to-day, who in remote ages might have swayed thousands, finds himself after a short career within the walls of a lunatic asylum.

VIII. A communication by *Drs P. A. Young* and *C. W. Cathcart*, entitled A CASE OF PELVIC PERITONITIS OF OBSCURE ORIGIN (WITH POST-MORTEM EXAMINATION), was read by Dr Young.

IX. *Dr Brewis* read the following NOTE OF A CASE OF HYSTERECTOMY DURING PREGNANCY:—

Mrs N., æt. 44, from Fifeshire, came under my care a month ago. She had no family, and had menstruated regularly till January of this year, from which time there had been amenorrhœa. She complained of a hard swelling in the abdomen, which on examination was found to extend to a point about 2 inches above the umbilicus. On the right side the swelling was hard and nodular; on the left it was soft and elastic. A well-marked uterine bruit was heard, but no fœtal heart sound could at any time be detected. The patient, however, averred that she felt movements. On vaginal examination the pelvis was found to be occupied by two hard, somewhat round tumours, one in front of the cervix pressing on the bladder, and one behind impinging on the rectum. The cervix was wedged between these tumours, and had the softening which is characteristic of pregnancy.

Diagnosis.—The case was evidently one of three conditions:—First, pregnancy in a fibroid uterus. There was no doubt that the patient had a fibroid uterus, because the growths could be felt, but about the pregnant state there was some uncertainty, as the fœtal heart sounds could not be heard. The softening of part of the abdominal swelling and of the cervix, along with the history of suppression of menstruation, was, however, strong affirmative evidence.

The second possibility was that we had to deal with a fibrocystic uterus. We know that fibroid tumours often undergo at the menopause a cystic degeneration of a malignant character. These tumours grow rapidly. There is usually some peritonitis and ascites, and the patients lose flesh. In this case those concomitants were absent.

Thirdly, We had to consider whether there was an ovarian tumour as well as the fibroid. In the left half of the abdomen the physical signs were quite consistent with those of an ovarian cyst, but as no line of separation existed between the hard and the soft portions, this possibility was diminished.

Treatment.—Assuming that we had to do with a pregnancy in a fibroid uterus, advanced to the fifth month, two alternatives presented themselves: first, to induce premature labour; secondly, to deliver through the abdomen. The former of these was considered impracticable, as the obstruction in the pelvis, caused by the two subperitoneal fibroids already mentioned, was such that even a five months' fœtus could not have been got through.

Abdominal section seemed the right procedure, because it would make our diagnosis clear; and if the condition of affairs was as we anticipated, the uterus with its contents could be removed.

Operation.—On opening the abdomen the right portion of the swelling was found to contain a number of interstitial fibroid tumours; the left was soft, and probably contained a fœtus. A supplemental fibroid as large as a fist grew from the posterior aspect downward into the pelvis. Another tumour of similar size grew under the peritoneum in front and pressed on the bladder. The former was movable, and along with the body of the uterus was brought through the abdominal wound and removed, after the latter had been encircled with a wire and constricted by means of Tait's modification of Hoëbert's clamp. The uterus contained a five months' fœtus. The pedicle was very broad; its size was reduced by clipping away portions of it with scissors; the ovaries were also removed. The patient made an excellent recovery.

X. *Dr J. Haig Ferguson* read the following NOTE ON A BROAD LIGAMENT CYST REMOVED BY ENUCLEATION, and which was so tensely filled with fluid (about two quarts), that its pelvic portion before operation gave all the physical signs of a hard, solid tumour:—

I venture to record the following case chiefly for the sake of the interest attaching to its diagnosis, from its anomalous physical signs, which only serves as a further illustration of how uncertain one often must be of the exact nature of an abdominal or pelvic tumour before operation.

Miss J. A., æt. 55, came to me from Dr Crombie of North Berwick about a month ago, complaining of abdominal discomfort, frequency in passing water, and a painful swelling in her side. She had first noticed the swelling in October 1893, and the other symptoms had gradually developed and increased since then. She did not think the swelling had increased much in size since she first noticed it.

She had always been perfectly healthy and strong till the present illness began. She ceased menstruating at the age of 50 (five years ago), having begun at the age of 15. Her periods latterly had been very profuse, and she had a flooding just before menstruation entirely ceased.

The digestive system and bowels were normal.

The patient is spare, but with an extremely healthy appearance, and looks young for her age.

On examining her abdomen, a swelling, somewhat tender on pressure, and nearly as large as a cocoa-nut, could be felt in the middle line. It was obscurely fluctuating, and dull on percussion.

A vaginal examination was impossible, owing to a rigid hymen.

Per rectum, a round hard tumour, about the size of a fœtal head or larger, could be felt fixed in the pelvis, giving no evidence of fluctuation, and so different in consistence from the swelling felt through the abdomen, that they seemed to be different structures, though no separation could be felt between them. The uterus could not be felt per rectum. The lumen of the rectum was considerably encroached on by the pressure of the tumour.

I declined to come to any definite diagnosis till I could make a vaginal examination. This I had an opportunity of doing two weeks later, when she returned to town, and I examined her under chloroform. I found the uterus slightly raised in the pelvis, and flattened out against the hard, apparently solid growth, which nearly filled the brim of the pelvis, and bulged down into the posterior fornix. The abdominal cyst could still be felt fluctuating on bi-manual examination, but I could not differentiate it as being separate from the solid tumour below. The whole tumour was fixed in the pelvis. The cervix had the senile characteristics, and the os was directed backwards. The uterus could not be separated from the tumour, and it was stretched out beneath it in such a way as almost to give one the impression that the tumour grew from its posterior wall.

I was unable to pass the sound more than one inch, as the uterine cavity seemed twisted. The uterus felt fairly normal as regards size, but gave the impression of being somewhat elongated. It was lying more to the right side, and was anteverted.

Many of the physical signs pointed to a semi-solid intraligamentary tumour, but the pelvic portion was so hard and firm that it felt more like the consistence of a fibroid of the uterus, and the patient's menstrual history lent some weight to this view. Taking this view, the abdominal cyst was quite a distinct and separate growth. The possibility of a fibro-cystic tumour of the uterus had also to be kept in mind; this was, however, unlikely, both from the age of the patient and the absence of a souffle.

On opening the abdomen, the cyst was exposed, and was found to be thin-walled, bluish in colour, and intimately associated with the left broad ligament. It had originally been entirely interligamentous, but had burst through the ligament above, while its lower part lay deeply imbedded between the layers of the broad ligament. It thus lay in the broad ligament very much as an egg does in an egg-cup.

On tapping the cyst, fully two quarts of a limpid straw-coloured liquid were drawn off,—much more than, from its apparent size, one would have expected it to contain. To my surprise, I found that the mass in the pelvis, which had seemed to be so hard and solid, had collapsed after the tapping, and that, after all, there was only a single simple cyst to deal with. The cyst was unusually easily enucleated from the broad ligament, and the patient has made an excellent recovery.

The interesting and instructive point in the case is, that two such diverse physical signs should be given by one simple thin-walled cyst,—the fluctuation of that part of it which had escaped from pressure of the broad ligament, and the firm hardness of that part of it which remained inter-ligamentous.

XI. *Dr R. J. Erskine Young* communicated a CASE OF SEVERE MENSTRUAL HEADACHE SUCCESSFULLY TREATED BY PREMENSTRUAL VENESECTION, which appears at page 220 of this Journal.

XII. DISCUSSION—"SHOULD ANTISEPTIC VAGINAL DOUCHING BE MADE A ROUTINE PRACTICE IN THE PUERPERIUM."

Dr J. Halliday Croom, in opening the discussion in the affirmative, said,—The subject on which you have asked me to inaugurate a discussion seems to me one upon which most men uphold similar, if not the same opinions, and therefore the field left for argument is considerably curtailed.

Antiseptic douching of the vagina was introduced into routine practice when antiseptics as a system were adopted by obstetricians. It formed an integral part of the antiseptic management of labour and the puerperium. The objects aimed at in the antiseptic system are:—The prevention of the introduction of germs, *i.e.*, antisepsis before confinement, and paralysing their action, *i.e.*, antisepsis after confinement.

Although at the first the methods were complex, including even the adoption of the spray during delivery, yet all that is left now to us of the routine use of antiseptics is their application to fingers and instruments, and the antiseptic douching of the vagina before and after labour. Now, I think no one would question for a moment that the routine use of antiseptics has been the greatest addition to obstetric practice since the introduction of chloroform. This is not the occasion for me to point out the revolution which antiseptics has brought about in childbed mortality. The records of Paris, Copenhagen, Prague, London, and Edinburgh are sufficient in themselves to illustrate this point. The reduction of mortality from 15 per cent. to *nil*, as was the case in Paris, is in itself a sufficiently startling example of the brilliant results thus achieved, and the fact remains that this system of antiseptic midwifery alone is responsible for the diminished mortality.

Doubtless antiseptics have played a more important part in hospital than in private practice. There the results have been specially marked, and this in a great measure is due not only to scrupulous cleanliness on the part of doctor and attendants, but in a great measure to the regular and careful antiseptic washing, not only of the vulva, but of the vagina as well, by means of the vaginal douche. The hot carbolized douche previous to labour is perhaps of equal importance to post-partum washing. I believe that many cases of sepsis after labour could be avoided by careful removal by douching of secretions accumulated during pregnancy. In hospital practice, at any rate, I insist upon the vagina being irrigated and the vulva washed before even a vaginal examination is made. With regard to post-partum douching, the dorsal decubitus tends to promote the accumulation of the lochia in the upper part of the vagina. In this position the drain is not free; and in a hospital with a large aggregation of women under similar circumstances, the débris remaining there are apt to become a focus for infection, especially as they are lying in contact with a recent wound at the cervix; and further, which is of no small importance, the warm carbolized douche, by keeping the lochia aseptic, prevents the pollution of the air of the ward, as it obviates the accumulation of putrid matter in the atmosphere. One must further remember that in labour in a hospital we are dealing with an unnatural condition of matters,—for that part, in every labour the conditions we have to deal with are unnatural. In ordinary labour among the savages the rapid assumption of the erect posture makes the drain free, and therefore neither vaginal douching nor any other form of antiseptic interference is required; but the more complicated the surroundings of the patient become, the more needful is it to take artificial means to prevent sepsis. In a hospital, at any rate, I should advocate the routine use of vaginal douching with some germicide.

In private practice the conditions and environments are no doubt somewhat diffierent, but even then the principle is the same; and where douching can be carried out carefully and skilfully, I consider that any one who neglects it assumes a very serious personal responsibility. As a matter of fact, although no doubt of secondary importance, my experience is that patients in private prefer it from motives of comfort and cleanliness. It must also be kept in mind that a daily vaginal douche of antiseptic hot water will help to promote the involution of the uterus by stimulating uterine retraction.

The channels of infection in a puerperal woman are numerous. Two of these, viz., the perineal and the cervical tears, may at least be rendered harmless by regular douching. Of course, a good deal depends on the way in which this manipulation is performed. It is much better carried out with the ordinary can douche rather than by any form of syringe. The water ought to be a hot solution (about the temperature of 115°) of some antiseptic, such as Condy's fluid or carbolic acid (1 in 60), or corrosive sublimate (1 in 5000 or 6000). About a quart of one or other of these solutions should be allowed gently to irrigate the parts twice a day. At the same time care should be taken that the vulva should be washed with a similar solution, and an antiseptic napkin applied thereafter. I attach much importance to this, as I am convinced that it is a very important factor in the prevention of puerperal septic fever with or without inflammatory changes in the pelvis. The objections urged against this system are all, to my mind, more imaginary than real. The main ones are—(1), the opening up of the vagina and thus permitting the entrance of air; (2), the introduction of air through the irrigator; (3), injury to the parts; (4), the toxic action of the germicide used; and lastly (5), exposure of the patient. It will be observed that these objections all take for granted that the little manipulation is performed unskilfully. The same argument might apply to *any* manipulation. To object to any operation because it is not performed "secundum artem" is absurd. The same might apply to the use of forceps or the use of anæsthesia. A woman is much better delivered without an anæsthetic than to have an overdose of it; and it is a choice of evils for a woman whether she will have forceps unskilfully applied or have a long labour. Certainly, if the vaginal douching cannot be performed without the patient running the risk of being poisoned with corrosive sublimate, or having her vagina injudiciously opened up by an unskilful nurse, or have herself unduly and roughly exposed, she is much better to be left alone to discount her risks of sepsis. But in the hands of a proper nurse I believe that systematic vaginal douching is not only perfectly harmless, but of great utility.

Dr James Ritchie, in opening the negative, said that when we examine the mortality returns of the Registrar-General for Scotland, we find that during 1889 there were registered 277 deaths from puerperal fever, and in 1891, 378 deaths from the same cause. Probably, also, a considerable number of the cases classed as metritis and pyæmia were due to septic poisoning during the puerperium. When we consider that the large majority of these deaths are preventable, we are constrained to enter on the discussion of any question affecting the treatment of childbirth with a feeling of considerable responsibility. He did this with an open mind, and with the desire that the truth might be elucidated, and that his opinions and practice might be brought into accord with the truth, wherever it might be found to abide.

From the day when Dr Ritchie heard his revered friend and teacher Prof. Sir Joseph Lister deliver his inaugural address in the Chemistry class-room of Edinburgh University, on the Germ Theory of Putrefaction and its relation to Suppurative Processes in Surgery, he felt that a new light had fallen upon his eyes; and since that time he had had not only an unabating but an increasing belief in the antiseptic treatment of a great variety of diseases, although perhaps the methods of treatment had undergone considerable change. He well remembered how, in the early days of his medical studies, it was thought to be unsafe for those who did surgery to attend confinements. Of course there were, all over the country, very many general practitioners who had to do both, but the danger of surgical cases to lying-in women was recognised. Since the development of the antiseptic method we find no such incompatibility.

If any one has any doubt of the value of strict antiseptic treatment in midwifery, he has only to turn to statistics of results in maternity hospitals before and after the introduction of the antiseptic system to have his doubts removed—*e.g.*, those of the large Lying-in Hospital in Vienna, in which the mortality was reduced from almost 10 per-cent. to even less than 1 per cent. The records of the Maternity Hospital of Paris show a similar improvement, and so we might continue to extend the list with similar results in other countries.

In every case of confinement one of the dangers to be guarded against is that of septic infection, and he went to every case with this fully in view. The infection might arise in a variety of ways.

1. In the patient herself.
2. Because of an insanitary and infectious condition of the house.
3. It may be communicated by the hand of the nurse.
4. It may be introduced by the medical attendant.

In order to guard against infection by the first source, should every patient receive an antiseptic douche at the commencement of labour, before the passages have been bruised and torn, thereby having formed in them a number of absorbing surfaces? Garrigues of New York advocates this procedure. In some cases in which there exists leucorrhœa, or other vaginal discharge, it is necessary; and it is Dr James Ritchie's practice to institute antiseptic douching even earlier than this, viz., some weeks before the onset of labour.

As to the second source of danger, probably sad experience has taught us all to examine the lying-in room beforehand with the view of ascertaining whether the sanitary conditions are favourable. But in very many cases all over the country the room has to be accepted as it is found. Danger arising from this source is one which largely affects treatment in maternity hospitals, in which, from the constant succession of delivery cases, there is a necessity for special disinfection of wards. Without this, antiseptic treatment could not be fairly carried out. The details in this respect are some of those which pertain to certain localities and times, and do not apply to all places and times.

The third source of infection—the nurse, her clothing and hands—is also of importance. It is not an unnecessary precaution to guard the nurse against attending to her patient with hands which have not been disinfected, and specially to insist upon her washing the mother before she dresses the baby, while the stump of the cord is still *in situ*.

The fourth source of infection which was named,—viz., the hands and instruments of the accoucheur,—is, in general practice, by far the most important. However great the care taken to protect the patient against other sources of infection, it is of no avail unless the most scrupulous care is observed by the medical attendant in regard to his hands, instruments, and clothing.

The question which we have to discuss is not the advantages of the antiseptic treatment of women during the puerperium; but, Is antiseptic vaginal douching a necessary part of the antiseptic method? In other words, as the question is put down in the billet for to-day—Should antiseptic vaginal douching be made a routine practice in the puerperium? Then, we suppose, if this question is answered in the affirmative, there would necessarily follow a second, viz., How often is it to be done? In the School for Midwives, St Petersburg, in 1863, every patient had her uterus washed out with a solution of chlorinated lime two or three hours after delivery, and this was repeated several times during the first forty-eight hours.

The question is not whether there are circumstances of place or condition, local or general, which demand that vaginal douching should be used while these exist, but ought it to be made a part of the ordinary routine of the puerperium, without regard to place or condition,—just as much, for example, as the ascertaining whether the placenta and membranes have been completely expelled.

We can hardly bestow too high encomiums upon those who have introduced, or who—like our friend Dr Croom—have helped to systematize strict antiseptic treatment in our maternity hospitals. But the question arises, Do there not exist in these hospitals special dangers demanding special precautions,—precautions which may also become a necessity under other conditions of place or of person? If so, is routine douching necessary in general practice out of hospitals? It may further be argued that because such magnificent results have been attained in hospital practice, therefore, as there is in every case some danger of septic poisoning, the antiseptic method, down to its most insignificant detail, should be invariably adopted.

The speaker did not think that we do wrong to ask this question, even although the practice of hospital physicians should be in favour of its general use, because he could quite understand that when any method has produced such a wonderful change in results, as the antiseptic method has done in our maternities, there might be the tendency to consider that every portion of the method which has been adopted is essential; and that hospital physicians, being impressed with the benefits of the system in their hospital practice, should have advised its use as a method of routine to be observed in all cases.

He had already pointed out that there are certain dangers peculiar to maternity hospitals, or at least common in them, but uncommon in private dwellings. It is possible that some methods which may be essential in them are not necessary in private practice. Is vaginal douching one of these? Probably the best battle-ground for the discussion of this question is to be found in maternity hospitals, partly because statistics relating to them are more easily obtained than those relating to private practice, and partly because of the very marked improvement in results in them since the introduction of the antiseptic method. Have we any means of ascertaining whether the greatly improved results are due to the methods now generally used as a whole, or is there any one of the measures of supreme importance, or is any one of them unnecessary, or, at least, less so? The history of epidemics of septic fever in hospitals points to the frequent disinfection of the building, the bedding, and all the surroundings of the patient as being a matter of first importance, and the history of epidemics of septic fever outside of hospitals proves the great importance of the thorough disinfection of the person and the instruments of the accoucheur. What of the douching? Is this of equal importance? Is there any maternity hospital in which this is not adopted? Garrigues, of the New York Maternity Hospital, holds that it is not necessary even in hospitals. Before he introduced a careful system of antiseptic treatment into that hospital the mortality was nearly 8 per cent. from puerperal fever, and for a month nearly as high as 20 per cent. It is noteworthy that before his system was perfected he tried a method in which every patient received a vaginal douche before and immediately after delivery, and also morning and evening during the first eight days thereafter. Notwithstanding this care, the mortality from septic diseases was nearly 4 per cent. He had not at that time adopted the rotation of wards, the periodic and very careful disinfection of them; their ventilation was not so free, and the kind of antiseptics for attendants' hands and for douching was not perchloride solution, but a 2 per cent. solution of carbolic acid. After he had instituted the other measures just named, a vaginal douche of solution of bichloride of mercury, 1 in 2000, was given at the commencement of labour, but after that *no* vaginal injections were given, except in rare cases if the lochia became offensive. Under this method, with only a single douche, viz., at the commencement of labour, the total mortality during two years and ten months of what he calls prophylactic treatment was 0·98 per cent., and the mortality from septic causes alone was 0·42 per cent. This may be considered the more satisfactory when we learn that 42·64 per cent. of the cases were primiparæ. With these statistics before us, it can hardly be maintained that vaginal douching during the puerperium is a necessity.

But if not a necessity, is it a safe precaution even if it be superfluous? The first objection which he felt constrained to urge is that meddlesome midwifery is bad midwifery, that the less we require to interfere with parturient patients the better. Even in the matter of digital examinations, although no one would assert that with clean hands there is danger, it is none the less a wise precaution not to examine a patient oftener than is really necessary to keep us informed how the labour is progressing. So on this ground, if douching be not necessary it is better not to employ it as a routine part of treatment.

Next, in douching, unless we have skilled and careful nurses, there is danger from mechanical disturbance of the injured vaginal walls, etc., by means of the tube, and the consequent creation of fresh absorbing surfaces. Although many of our number may be able always to have the services of skilled nurses, we are discussing the question in its general application.

Without skilled nurses douching may be, and has been, a source of discomfort and of abdominal pain.

A further danger is that of poisoning by means of the antiseptic used. The most efficacious are perchloride of mercury and biniodide of mercury, but there are on record many cases of poisoning by means, at least, of the former. It would not be safe to serve out these antiseptics indiscriminately to every woman who attends confinements. Even in the hands of skilled nurses they require to be used with care, specially in the case of anæmic patients and those with kidney disease. In Dr James Ritchie's experience, when the discharge has become slightly offensive and acrid, it is sufficient to use a solution of permanganate of potash.

To sum up: The antiseptic treatment of every case is essential. Dr James Ritchie did not believe that the sad record extracted from the Registrar-General's returns already referred to arose in consequence of the want of douching. The experience of the New York Maternity seemed to determine this view, but that it arose from want of sufficient care either as to the sanitary condition of the lying-in room, or as to the hands of the attendants. The essentials of antiseptic treatment were, in his opinion, sanitary surroundings, and pure hands, instruments, and clothing. The routine use of vaginal douches during the puerperium he did not consider to be an essential part of the system. There were also certain dangers associated with douches—dangers which are greater at the hands of unskilled persons, and if due care were exercised in general practice it is safer not to use them. They ought to be reserved for those cases in which danger arises, and in which the less of the two dangers is the use of the douche with proper precautions.

Dr James Carmichael thought the subject at present under discussion was one of the utmost importance. He had given it a deal of consideration, and had been sufficiently long in practice to compare the methods of the present day with those formerly in vogue. Before answering the question of the propriety of antiseptic douches as a routine practice during the puerperium, he thought the question should be decided, first, in regard to natural unaided labour in private practice and in hospital; second, in regard to difficult or aided labour. There were really two separate questions in regard to which he thought experienced obstetricians would be inclined probably to vary their practice. Natural unaided labour under ordinary conditions was a healthy and normal process. When labour was over, say in a primipara, the condition of all parts above the ostium vaginæ—even although, as often happens, there might be a slight vaginal or cervical tear—were aseptic. The condition of the external parts when there was a slight tear may become septic. If the first proposition be accepted regarding the aseptic condition of the parts above the ostium vaginæ, the question must be answered how these conditions are altered and elements of danger introduced from without. The reply to this is, that it is by the meddlesomeness of the accoucheur that this comes about. It follows that if the accoucheur, finding the labour to be a natural one, interferes as little as possible, and when he does introduce the finger renders it perfectly aseptic, no danger will result. The question then arises, Whether under these circumstances antiseptic douches are required? The only logical answer is, that such interference is meddlesome and unnecessary. In regard to internal tears and wounds in otherwise normal cases, of course the most rigid care and antisepsis, so far as possible, should be carried out by washing the external parts and using antiseptic pads. The second question, the use of antiseptic douches in aided or difficult or instrumental labours, is quite a different one. Here the necessities of the case renders the patient liable to all the dangers of the introduction of noxious elements from the outside; and in these cases I think the routine practice of antiseptic douches for some days after labour is a good one. The next question which requires an answer of a definite nature is, Should the treatment of a puerperal woman in this respect be different in a hospital from that recommended in a private house? The remarks I have already made apply to private practice. In maternity hospitals a new set of conditions come in. We have congregations of puerperal women, and notoriously the hospital may at any time be an infectious place in the general sense of the term. Physicians, nurses, and students are examining one case after another, the same instruments are used for all cases, and safety only depends on the thoroughness with which antiseptic precautions are used. Unfortunately, we cannot see the germs of infection, and we never *know* whether from want of thoroughness in our precautions they may not be present. Still, we do our best and carry out antiseptic precautions as strictly as possible. The records of hospital practice prove that under the new system puerperal mortality is largely diminished. I therefore think that routine douching in *hospital* practice is a wise course, always provided it is properly carried out. One of the most urgent matters requiring ventilation in regard to this subject is that of the instruction of nurses in regard to their duties in douching puerperal women. I find that the nurses trained in the Edinburgh Maternity go into practice imbued with the idea that routine douching should be carried out in private practice as in hospital; not only so, but that they are entitled to have recourse to it without orders from the obstetric physician. And I do not believe they are so instructed. If they are, such teaching is open to grave objection, in my opinion. I hold it to be the duty of all teachers of nurses to instruct them to act solely under the direction of the doctor in this subject, and also that for the purpose of vaginal douching they must make use only of proper new vaginal syphon douches, and not use a Higginson syringe. We can never be sure that a Higginson syringe is aseptic, nor that we may not, in using it, introduce air into the maternal passages. Vaginal douching requires great care and caution in its use, and my experience leads me to believe that nurses are often careless in carrying it out. The responsibility for them devolves first upon the teacher, and secondly on the medical attendant, who has not taken pains to see all the minutiæ of after-treatment properly carried out. On the whole question, therefore, I am of opinion that we are not warranted in teaching our students and nurses that vaginal douching should be a hard and fast practice in all women, but that the obstetric physician, guided by sound principles, should judge each case on its own merits, and, as in all other cases, treat the patient as he finds her, rather than the puerperium as such.

Dr S. Macvie, Chirnside, said he contended that routine vaginal douching during the puerperium depended on its practicability as well as its necessity. In country practice, where the patient resided at a considerable distance, where the trained nurse did not exist, and the amateur nurse could not always be found sufficiently reliable,—where, nevertheless, the death-rate was practically *nil*,—it was difficult for the medical attendant to think, after doing all he could do, that he had not done all he ought to have done, in not douching the vagina twice daily for a week or ten days. He could not admit that a healthy woman was in a condition of sepsis at her confinement, and what was required was the maintenance of the aseptic condition. This could be done by thorough cleanliness in all the surroundings and the use of such an antiseptic as carbolated vaseline. He deprecated the meeting affirming the position taken up by Dr Croom; but at the same time felt assured that the discussion would incite everyone present, either by douching or other means, to obtain the end aimed at.

Prof. Simpson, being called on by the President, expressed his regret that his attendance at another meeting had hindered him from arriving in time to hear the opening paper of his friend and colleague Dr Croom. Whatever may have to be said in favour of routine douching of puerperal women in maternities, he was largely in agreement with Dr Ritchie as to the position Dr Ritchie had taken in regard to this measure in general practice. He (Prof. Simpson) had been surprised to hear from Dr Carmichael that the nurses had been so officious in this matter. It was quite contrary to the spirit of the teaching that was imparted to them in our Maternity to take it upon themselves to carry out any kind of treatment, except under direct instruction of the doctor in charge of a case. Certainly vaginal, and still more intra-uterine douching, ought never to be undertaken unless it were specially ordered by the responsible physician. As to the conditions requiring the use of the douche, he (Prof. Simpson) thought that any practitioner who had lost a puerperal patient from septic mischief ought to have great misgivings in his mind as to whether all had been done that might have been done to save her, if he had not made free use of the intra-uterine antiseptic douche. But where a man had been careful to cleanse the passages before or during the labour, and where he had been specially careful to conduct the process aseptically, and to disinfect the cavities and canals after any kind of interference, there was little likelihood of any danger supervening; and to have recourse to twice-a-day routine douches in such a case would certainly subject the patient to much inconvenience, and might introduce new elements of danger.

Dr W. Martine, Haddington, referred to what had fallen from previous speakers as to the duration of the puerperium in connexion with the use of routine antiseptic douching. He well recollected a case which occurred in his practice many years ago, where a poor woman was confined in a cart-shed at a farm within two miles of Haddington at five o'clock in the morning, and next afternoon between three and four she was walking through the streets of the town, and certainly in her case no douching of any kind was had recourse to. As to the question of the propriety of antiseptic douches as a routine practice during the puerperium, Dr M. agreed very much with the remarks of Drs Carmichael and Macvie, that in natural and unaided cases, if thorough cleanliness be strictly observed in all the surroundings, frequent douching is unnecessary, and to carry it out in every case in country practice is well-nigh impossible.

Dr Hunter very strongly advocated the routine use of the vaginal douche. He spoke from an experience of twenty-seven years, during which he had attended a large number of deliveries, and had been unfortunate enough to have lost several cases from two separate outbreaks of puerperal septicæmia. In reverting to these fatal cases, the mental distress they at the time occasioned was vividly recalled; and this, as well as other circumstances, induced him to use all the precautions in his power to prevent a recurrence of a similar experience. To antiseptic vaginal douching in such prophylaxis he assigned a foremost place. In discussing this question it must be kept in mind that the city physician engaged in extensive obstetric practice is placed in a different, and, he believed, more favourable position for successfully conducting his cases than his brother practitioner in the country. The former restricts his surgical practice, and seldom, if ever, is called upon to perform *sectiones* in bodies in varying conditions of decomposition. The latter is hurriedly, and frequently unexpectedly, called from surgical septicæmia, zymotic diseases, such as scarlet fever, and after performing post-mortem examinations in medico-legal cases, to attend confinements miles from his home; and although he uses all the precautions in his power and at his disposal, with the intention of securing manual and personal antisepsis, in a certain proportion of cases there is a very considerable risk of a varying dose of the poison being absorbed and unhappy results following. It is urged that only in the abnormal cases is the douche-can required, and he took it that few would dispute its proper use in these; but at the termination of the labour it is impossible to be certain to what extent there may be cervical tears or limited vaginal lacerations. In all such cases as those referred to, the patient is placed in a much better position by vaginal antisepsis to resist the possible action of morbific germs; and if admittedly necessary for cases going wrong or threatening to go wrong, it is surely a wise precaution to make its use a routine practice. The difficulties in its efficient performance had, in his opinion, been unintentionally exaggerated, and he believed any woman of ordinary intelligence, without being at all a trained nurse, should, after seeing it done and having it explained to her, have no difficulty in satisfactorily carrying it out. The fresh good colour with which those who have been regularly douched get up, in contrast with the yellowish, drawn look so often seen in those who have not, was only one of the minor evidences in favour of the course recommended. The results in his own practice have amply justified its employment, for since commencing its regular use he had not lost a case.

Dr Connel thought that theoretically they were all agreed that too great care could not be taken in the matter of surgical cleanliness, though he should be sorry to think that vaginal douching was to be held a necessity in every case during the puerperium. One cause mentioned by Dr Ritchie, but not dwelt upon, was insanitary surroundings as leading to puerperal mortality. He thought they owed more to this cause in country towns than to any other, though he was glad to say that even there, people were now waking up to the necessity of having thoroughly efficient drainage arrangements. He was disposed rather to favour the American plan of setting the patient up after the fourth day, supported in bed, with the feet over it, in order to promote flow of the lochia from the uterus and vagina. He made a plentiful use of sublimated vaseline for hands and instruments, and found that precaution sufficient. Of course, in case of offensive odour or rise of temperature the douche might be essential.

Dr Spence, Burntisland, while agreeing with all that had been said as regards its routine use in hospitals, would be sorry that it should get abroad that the omission of vaginal douching was a neglect of duty on the part of the doctor. He had had experience of this statement being made by a nurse who casually came in the way of a patient, with resultant blame. It was impracticable as a routine in country practice. He could not agree with Dr Hunter that any ordinarily intelligent woman could be entrusted with the operation. He trusted to strict personal asepsis and careful cleansing of instruments. He noticed that most of the septic cases he had seen were not in his own, but in the practice of more or less qualified midwives, who were apt to neglect precautions of this kind. He could not, as a country practitioner, support its routine use.

Dr Thom, Crieff, thought he might state on behalf of those who were engaged in practice in the provinces the results of his experience. It was that there was no necessity for making vaginal douching a routine practice after delivery. Very many of them could say, like a former speaker, that their record of mortality in puerperal cases was *nil*. In maternity hospitals elements occurred which did not appear in general practice. He was quite of opinion that in simple uncomplicated cases the uterus and the vagina also were perfectly capable, by the power inherent in their tissues, of getting rid of all their own post-partum secretions, which in healthy women were innocuous; and they should regard it as a shame, and highly culpable, to be the means of introducing anything septic. The vagina was not a rigid tube, but possessed the power of mechanico-vital action, and did not depend upon gravitation alone for removal of its contents. He had no hesitation in using the douche, however, when manipulative interference was necessary, whether by instruments or the hand.

The President said that this was one of the most interesting discussions which had taken place since he had joined the Obstetrical Society. He was not aware that they had ever had such a large gathering of the Fellows, and the varied character of the discussion made it of peculiar value. A special feature had been the expression of opinion on the part of the country members, embodying, as it did, the results of extensive practical experience. The discussions in the Society were apt to be too rigidly scientific, and they welcomed all the more one like this of practical utility, and the contributions of those who looked at things from the practical standpoint. The question under discussion was many-sided, and one on which there would be naturally divergence of opinion. Personally he inclined to the opinion expressed by Dr Croom, who was in favour of systematic vaginal douching. There was one argument for it which had not been brought forward. All inflammatory affections in the puerperium were septic in origin,—for example, a localized cellulitis from a torn cervix. He believed that these were less frequent since vaginal douching was employed, which aimed at treating the torn cervix as we would any raw surface which we washed daily with an antiseptic, because it was not healing by first intention. The general opinion of the Society was, however, decidedly against recommending vaginal douching as a *routine* practice during the puerperium,—that is to say, that we were not to regard it as necessarily a part of antiseptic midwifery. He regretted if it was the case, as Dr Carmichael had mentioned, that the Edinburgh Maternity nurses made no distinction between what was done in hospital and what was necessary in private practice, where their first duty was to carry out the instructions of the physician who was responsible for his patient. In closing the discussion he thanked the country members for the way in which they had availed themselves of the change of hour so as to be present on this occasion, and expressed the hope that this would be only the first of many similar gatherings.

After the discussion the Fellows dined together as guests of the President, and a most enjoyable evening was spent.

Part Fourth.

PERISCOPE.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P. Ed., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, and on Midwifery and Gynæcology, School of Medicine, Edinburgh.

Ovariotomy, etc., in Colombia.—Dr Manuel Antonio Perez, in a couple of papers considers the progress that abdominal surgery has made in Colombia. The first laparotomy was performed in 1887; unfortunately the patient died. Later in the same year, however, a successful case occurred in Antioquia. Twenty-nine operations in all have been performed, chiefly in Bogota, Antioquia, and Santander, and of these eleven proved fatal. The mortality in Bogota was 35 per cent., and in Antioquia 28 per cent. A great many (6) of the deaths were due to shock. The author ascribes the frequency of death by shock to the climatic conditions prevailing in the country. He regards the prolonged exposure of the visceral and parietal peritoneum to a temperature below 20° C. as one of the chief determining causes of the fatal results in the abdominal section cases. The better results obtained in Antioquia, as compared with Bogota, is due to the higher temperature prevailing during the usual hours of operation (9 A.M. to 12 noon). The operations consisted of 18 ovariotomies, 3 supra-vaginal hysterectomies, 1 abdominal hysterectomy, 1 salpingotomy, 2 exploratory incisions, and 1 intra-peritoneal enucleation of a fibro-myoma. The author insists upon the necessity of operating in a properly heated atmosphere, as well as guarding against septic infection by antiseptic precautions before the operation, and rigorous asepsis during its performance.—*La Revista médico-quirúrgica*, December 1893 and January 1894.

THE OPERATIVE TREATMENT OF CYSTS OF THE BROAD LIGAMENT.—In a paper by Dr C. Gangitano five cases are described, in each of which a unilocular cyst of the broad ligament was removed. One of the patients died from hepatic cirrhosis about a month after operation; the other four recovered. In all the cases the cyst was a large intra-ligamentous one with a broad base of attachment, so that no proper pedicle could be formed. The cyst-walls were therefore shelled out from the tissues of the broad ligament in the manner adopted by Lawson Tait, and described by him in connexion with a series of cases in 1889.—*Il Policlinico*, June 15th, 1894.

ABSCESS OF THE OVARY.—Dr Paul F. Mundé points out that whilst abscess of the ovary used to be regarded solely as the result of a post-puerperal inflammation, it is now, through the frequent practice of abdominal section, well known that it may occur entirely independent of parturition. He has operated sixteen times for this condition, and only five of the patients operated upon had borne children or aborted. Of the sixteen cases only one died, the cause being septic peritonitis. In eight of the patients there was a double abscess, in six the left ovary alone was in a state of suppuration, and in two the right alone. In all cases the tubes of both sides were affected. Abscess of the ovary may exist for a long time without giving rise to marked or alarming symptoms, the reason being that the sac of the abscess becomes enclosed little by little in firm adhesions, which prevent its rupture, and systemic infection is limited by the comparatively slight absorbent power of the walls. Pus in the ovary may exist along with pyosalpinx, and is then difficult to diagnose; but when it exists apart, it can be recognised by its round elastic contour, which is quite unlike the elongated sausage shape of the pus-tube. The only proper means of treatment of abscess of the ovary is to open the abdominal cavity, enucleate the sac of the suppurating ovary from its adhesions, and remove it, together with the tube of the affected side.—*Gaillard's Medical Journal*, May 1894.

SCANTY MENSTRUATION.—Dr F. Townsend discusses scanty menstruation, and finds that it is most usually the result of malnutrition in both young and middle-aged women, married or single. He believes that the primary seat of the trouble lies in the condition known as chloro-anæmia. Its treatment must, therefore, be directed in an intelligent manner towards rectifying this condition, and persistent patience must be persevered in with the various forms of treatment laid down if a permanent cure is to be expected. Salines first, and then iron, are indicated. The author speaks somewhat highly of electricity, but he has not seen much benefit follow the use of manganese in any of its various forms.—*Gaillard's Medical Journal*, May 1894.

THREE CASES OF ABDOMINAL SECTION.—Dr Matthews Owens records three laparotomies performed in Brisbane: one was an oöphorectomy for pyosalpinx and cystic ovary, the second was an ordinary ovariotomy, and the third was abdominal section for extra-uterine fœtation. In the last-named case the fœtus, after having reached the age of five or six months, must have escaped into the abdominal cavity, although there was no history of illness at the time, and there it remained for fourteen years till Dr Owens operated upon her. The patient died of cardiac syncope on the fifth day after operation. The author believes the case to be unique as far as Australasia is concerned.—*Australasian Medical Gazette*, April 15, 1894.

ABDOMINAL SECTION FOR UTERINE FIBROIDS.—In an address to the section of Obstetrics and Diseases of Women in the American Medical Association, Dr Joseph Eastman speaks in favour of myomectomy. With regard to Keith's experience in this field, the author says: "Even the great and noble Dr Thomas Keith, after battling with fibroid tumours with as good a percentage of recoveries as any one at that date, finally abandoned myomectomy, resorting to the use of electricity, and only wished that he had back from their graves the patients that had died from his operations for fibroids. Thank God, there were others to take up the work when he became discouraged." He goes on to say, that "almost every State of our Union has operators who would venture to give a woman with a fibroid tumour the chances of life which surgery offers." We do not think this state of things is one to be altogether thankful for; a fibroid does not usually cause death if left alone. Dr Eastman looks forward to a time when fibroids will be removed with as low a mortality as ovarian cysts: "Then shall the torch lighted by McDowell in the midnight darkness shine forth with resplendent glory in this brilliant noonday of abdominal surgery. The century which in a few years will have rolled on to the eternal past has placed in the magnificent temple of medicine many pillars of surpassing beauty and grandeur, while its surgical columns have risen high toward heaven, where as gilded towers they fain would vie with the God-given sunshine in dispelling the chill and gloom of human agony." Not content with mixed metaphor, the author burts forth into song:—

"Chirurgia's tower, thy light's resplendent blaze
Dries woman's tears and lengthens out her days.
McDowell and Sims, of our Columbia's clime,
Began the work, moved onward, nigh sublime.
To woman, then, these blessings shall be given,
Queen of the home, and home the type of heaven."

—*Medical News* (Philadelphia), June 9, 1894.

CÆSAREAN SECTION IN PLACENTA PRÆVIA.—Prof. Bernays, of St Louis, has performed the first successful Cæsarean section for placenta prævia, an operative procedure recommended some years ago by Lawson Tait. The child, about eight months, died ten hours after the operation. With regard to the performance of laparotomy in central placenta prævia, the writer says: "If an expert operator can be had who has done or assisted at more than 200 abdominal sections of all kinds in which the total mortality was less than 7½ per cent., by all means let him do the Cæsarean section. If no such surgeon is at hand, select a physician to deliver the child who has frequently turned and extracted,—one who knows how to clean his hands, and who knows that it is a very difficult and tedious task to shave and cleanse the vulva and vagina."—*The Journal of the American Medical Association*, May 12, 1894.

FATAL NAUSEA AND VOMITITING OF PREGNANCY.—Dr Edward P. Davis, in a paper which reminds one of the late Dr Graily Hewitt's contributions, gives details of three fatal cases of vomiting in pregnancy. He believes that the condition is dangerous in proportion as it induces pernicious anæmia. In one of the cases retroflexion of the uterus existed; in another anteflexion, with the presence of retention cysts in the cervix, leading to the impaction of the uterus against the symphysis pubis; and in the third there was uterine anteflexion. In the author's opinion the pernicious anæmia which develops leads to atrophy of the gastric mucous membrane.—*Medical News* (Philadelphia), June 2, 1894.

OCCASIONAL MEDICAL PERISCOPE.

By A. LOCKHART GILLESPIE, M.D., F.R.C.P.E.

TUBERCULAR VEGETATIVE ENDOCARDITIS.—MM. P. Londe and R. Petit (*Archives Générales de Médecine*, January 1894, p. 94) record a case of this disease. They divide tubercular endocarditis into three classes:—1, The granular form; 2, the caseous form; 3, the form in which tubercular vegetations on the valves give rise to symptoms identical with those of simple endocarditis. Their patient belonged to the third category. A girl of 25, she suffered from epileptic attacks in her youth, and her left side was paralysed from early years, "*l'hémiplégie spasmodique infantile.*" The actual disease first showed itself in a phlebitis of the left leg. The whole of the right side, including the face, became œdematous, and the face congested. The heart-sounds were feeble. A systolic bruit was propagated from the apex into the axilla, and another from the xiphoid cartilage to the base. The urine contained some albumen. There was no fever nor any symptom of disease of the lungs. At the autopsy the bases of the lungs were found to be full of old caseous nodules. The heart was large, fatty, the tricuspid valve incompetent, and on the mitral valve were found several vegetations of the size of lentils. Microscopic investigation of the vegetations showed only a few tubercle bacilli, chiefly on the surface, close to their junction with the endocardium. Inoculation of a guinea-pig proved successful.

THE MODE OF ACTION OF LARGE DOSES OF BISMUTH SALTS IN IRRITABLE GASTRIC CONDITIONS.—In an original paper in the *Centralblatt für Innere Medicin* for January 6th, 1894, Dr Max Matthes gives the results obtained by him during the course of an investigation into the action of bismuth on the gastric mucous membrane. If large doses of the subnitrate of bismuth were given to dogs, and after ten or twenty minutes the dogs killed, on opening the stomach the salt was always found gathered together at the lowest part. If, however, the dog was allowed to live for several hours, even if kept in one position, the bismuth was found, after death, to be nearly equally distributed over the gastric wall, and mixed with the mucus. If given on a full stomach, little was found in the stomach contents proper, but almost all mixed with the contained mucus adhering to the walls. The exhibition of bismuth evidently increases the secretion of mucus.

Matthes proceeds further than this, however. He gave dogs in whom he had artifically produced gastric ulcers large doses of bismuth. On killing the dogs some hours after, in some he found no bismuth over the injured part, in others he found a protecting crust formed over it and protecting it. On microscopic examination of the tissue below the ulcer, crystals were detected, which answered the tests for bismuth. In conclusion, he states that in his opinion massive doses of bismuth are of use in some dyspepsias, and especially in gastric ulcer.

THE ACTION OF BITTERS ON DIGESTION, NATURAL AND ARTIFICIAL.—A series of papers in the *Ungarischer Archiv für Medizin* (Band ii. Heft 3 and 4) on different parts of the above subject deserves a notice. In the first paper Prof. Bókai gives the histological appearances of the stomach cells in starving and well-fed dogs after the administration of calumbin and quassin, and argues from their condition that the secretion of both the cells of the fundus and the pylorus are rendered more active by them. Reusz tabulates the results of numerous artificial digestion experiments performed on raw and cooked meat both with pepsin and trypsin in the presence of bitter stuffs. Their presence hinders peptic digestion,—quassin least, calumbin and condurangin most; while in tryptic digestion absinthin seems to aid the process, calumbin to hinder, the results from the others being indeterminate. Bernhard Vas investigates their antiseptic action, which he states at *nil*, while he finds that quassin and calumbin are slightly inhibitory to micro-organisms. Huber gives the results of an investigation into the action of bitter drugs on the peristalsis. Calumbin and absinthin increase the peristalsis, quassin has no effect on it. To ascertain the effect of these bodies on the intestinal putrefaction, Geyza Gara estimated the aromatic sulphuric acid in the urine after their administration. He finds that they have little inhibiting power, if any.

THE BLOOD.—Albertoni ("Studi clinici sulle affezioni emorragiche," *Centralblatt für Innere Medicin*, No. 15, 1894), investigating the blood in cases of scorbutus and hæmophilia, finds that in the first-named disease the quantity of iron contained in it is diminished by a third, and that not proportionally with the decrease in the red corpuscles,—in fact both the red and white corpuscles were not so markedly diminished, while there is no alteration in the amounts of potassium and chloride of sodium present. In hæmophilia the vessel walls and the blood plates are fragile and easily injured, the blood coagulates slowly, and the blood plates do not adhere to the walls. The cause of the copious hæmorrhage is, in his opinion, too rapid breaking up of the red corpuscles.

Gravitz ("Ueber die Anämien bei Lungentuberkulose und Carcinose," *Deutsche Med. Wochenschrift*, 1893, No. 51) finds that the red cells and dry residue of the blood in phthisical patients at first rise in numbers and quantity, but as the disease progresses sink below normal. By experimenting on animals he succeeds in obtaining the reason for this, as the blood values rise after injection of extract of tubercular masses, while after the introduction of septic material as well the values fall. In cancer, on the other hand, the blood corpuscles and dry residue decreased throughout, and this occurred similarly in animals after injection of an extract of cancerous tissues.

PERISCOPE OF SYPHILIS AND GENITO-URINARY DISEASES.

By FRANCIS CADELL, F.R.C.S. Ed.

ON THE PHYSICAL CAUSES OF SEXUAL DEBILITY IN THE MALE AS DISTINGUISHED FROM PSYCHICAL CAUSES.—In *Gaillard's Medical Journal*, April 1894, Dr Sturgis has a paper on this subject, of which the following is a summary:—1. That the cases of sexual debility which are marked by imperfect erections and by premature emissions, are usually, if not entirely, due to hyperæsthesia of some portion of the urethra. 2. That masturbation has very little, if anything, to do with it beyond the fact that if indulged in to excess, it may induce a tendency towards this hyperæsthetic condition, but this is no more marked in masturbators than it is in those persons who indulge to excess in the venereal act. 3. That organic stricture has little, if anything, to do with it, but that associated with this hyperæsthetic condition there is an irritable condition of the canal which produces spasmodic contractions of the urethra upon attempts to pass instruments, oftentimes during the first act of micturition and at the time of connexion. 4. That varicocele plays no unimportant part in these cases. 5. That neuralgia of the testis, if a cause of this disease, induces it merely as a secondary consequence to the pain which is one of the distinguishing features of this disease. 6. That tuberculosis, syphilis, and gonorrhœa may also play their part, and should all be reckoned with in summing up the causes which may induce this peculiar and depressing condition of affairs.

JUSTIFIABLE PREVENTION OF CONCEPTION.—The physician not infrequently has to warn against conception in cases where pregnancy would endanger the life or health of the patient. Pelvic contraction, abdominal and uterine tumours, etc., form such indications. The advice to abstain from coitus is seldom followed, and the means usually employed to prevent gestation (mechanical) are objectionable from a hygienic and ethical point of view. Kleinwachter has endeavoured to find a remedy which would have none of the aforementioned drawbacks. He prescribes a cacao-butter suppository containing ten per cent. of boracic acid, to be introduced high up in the vagina. These suppositories dissolve in about one hour, and the liberated acid destroys the spermatozoa. Bichloride of mercury in 0·001-gramme doses can also be used, but in that case the vaginal douche has to follow the sexual act. The solvency of the suppository is heightened by adding one grain of oleum olivæ. The author considers this a safe and sure remedy to prevent conception. Therapeutic efforts may be combined by the adding of various drugs—for instance, tannin in cases of uterine catarrh.—*Med. Age.*

CASE OF CHANCRE OF LOWER LIP.—I was recently called to see a female servant in a gentleman's family suffering from severe headache. The pain affected the left side of the head, and the upper eyelid of the same side drooped a little. Besides the headache, there was a raw-looking sore, as big as a threepenny piece, on an indurated base, to the left of the middle line of the lower lip. The submaxillary glands of the same side were enlarged and painless. On looking at the skin, there was a faint macular eruption over the chest, upper part of abdomen, and inner aspects of both forearms. She had noticed the sore on her lip for five or six weeks. On inquiry, she told me that she "kept company" with a young man, with whom I asked for an interview. Soon afterwards he called on me, and his condition was interesting. There was a mucous patch on the left side of his upper lip. He had been infected with syphilis eight months before, and the indurated site of the primary sore was easily felt on the body of the penis behind the glans. The glands of the groin were knotty, and there were stains of a former eruption. The girl's headache soon disappeared along with the temporary droop of the upper eyelid. She was removed to a house where there were no children, with strict orders to avoid any risk of infecting others. These cases of syphilis insontium are very sad. This poor girl for a time loses her means of support, may have her health permanently injured, and has the prospect, if she marries, of having for years to come syphilitic children, and all through no fault of her own.—Dr Cadell, *British Medical Journal*, July 14th, 1894.

The following cutting is from an advertising sheet, setting forth the advantages of a proprietory medicine, and shows how a female doctor can prescribe for a male patient through his wife!

NOCTURNAL INCONTINENCE OF URINE—PRE-SENILITY—BUDDING WOMANHOOD.—I must say that . . . . . surpasses any preparation I ever used for nocturnal incontinence of urine. It also seems to bring on hilarity of spirits in both male and female alike. It builds up the constitution in the old and the young, and inspires hope in the once broken-down spirits where there was no hope formerly. I used it on a man, through his wife, for loss of manhood, and it acted like a charm. On the young girl it seems to cause her to bud forth into womanhood, as it has been represented.

Richmond, Va. MRS DR. ———.

Part Fifth.

MEDICAL NEWS.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH, AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The quarterly Examinations for the Triple Qualification in Edinburgh took place in July, with the following results in so far as concerns the

Final Examination.—Of 115 candidates, the following 62 passed and were admitted L.R.C.P.E., L.R.C.S.E., and L.F.P. & S.G:—Matthew Wilson, Linlithgowshire; David Dickson Muir, Edinburgh; John Russell, Aberdeenshire; Edward Alan Rustat Covey, Basingstoke; Thomas Henry Agnew, Liverpool; Frederick Gustave Wooding Deane, Barbados; Charles Hendrie Barrington Armstrong, Jamaica; George Edward Douglas, London; Archippus Harry, Jamaica; Percy Slack, Yorkshire; Thomas Taylor, Greenodd; Harwood Henry Osborn, Victoria; William Corkey, County Armagh; William Leitch Crewdson, Edinburgh; William Edelsten Bracey, Birmingham; Joseph Nelson, Limerick; Richard Dagger, Lancashire; Hugh Gillies, Argyllshire; Edwin Charles Hayes, Dublin; Arthur O'Leary, Cork; Charles Sumner Edwards, Staffordshire; John William M'Gregor, Sunderland; Gopal Govind Vatve, Bombay; Ida Bowie, Madras; Frank Jones Farley, Ontario; Moondakel Moopen Michael Joseph, Travancore; Florence Ada Holt, Yorkshire; William Dill, Cork; George Gibson, Cork; John Gabriel D'Mello, Bombay; David Francis Blanchard, Armagh; Hugh Munro MacLeod Mackenzie, Cumberland; Patrick Sheehan, County Kerry; Edward Ronald Armstrong MacDonnell, County Clare; William Henry Penrose, Cork; Charles Ernest Player, Swansea; Krishnajee Vishnoo Kukdey, India; William Gordon Donald, Fordoun; Jean Baptiste Dumaine St Cyr, Haiti; Alexander Duncan, County Derry; Joseph Frederick Campbell, Athlone; Thomas Owen Jones, Anglesea; Clyde Longman Hayes, Sheffield; Holland May Harrison, Liverpool; John Joseph Hayes, Limerick; Hugh Percival Whitwell Lincoln, India; Edward John Herington Budge, Somerset; John James Bell, Tyrone; Thomas Denis Sullivan, Dublin; Frederick Augustus Routch, Buenos Ayres; Frederick Stanley Hogg, London; William Handford Thomson, India; David Hart Scott, Dumfries; Llewellyn Williams, London; William Patrick M'Grenahan, Roscrea; John Forrest Sutcliffe, County Kildare; James Stuart Gallie, County Cork; John O'Leary Driscoll, County Cork: William Conway Gent, London; Frederick George Smith, Stockton-on-Tees; Patrick Joseph O'Keefe, County Cork; and Edward Peter Aserappa, Colombo—16 candidates entered for the respective divisions, and 9 passed.

Royal College of Surgeons of Edinburgh.—The following gentlemen, having passed the requisite Examination, have been elected Fellows of the College:—Robert Clark Wakefield, M R C.S. Eng., London; Harry Bawa, L.R.C.P. & S.E., Colombo, Ceylon; Joseph Robins Arthur, L.R.C.S.E., Ontario, Canada; James Musgrove, F.R.C.S. Eng., Edinburgh; John Freeman, M R.C.S. Eng., Bristol; Ellis Thomas Davies, M.R.C.S. Eng., Liverpool; Charles Lane Sansom, M.R.C.S. Eng., London; and Edward Gerald March, M.R.C.S. Eng., London.

The following gentlemen, having passed the requisite Examination, have been admitted Licentiates of the College:—James Gowans Laing, Friockheim; and John Donald Small, India.

The following gentlemen passed the First Examination for the Licence in Dental Surgery:—John Alexander Young, Edinburgh; Alfred Lamyman, Middlesbro-on-Tees; Seymour William Nicholas Swales, Sheerness; George Crichton, Perth: John Ainslie Duncan, Fife; Charles Herbert Fox, Gloucester; Boswall Cumming, Hull; Tom Tinley Tinley, Whitby; James Wallace Bell, Edinburgh; William Forsyth Tulloch, Elgin; and William Jones, Edinburgh.

The following gentlemen passed the Final Examination and were admitted L.D.S. Edinburgh:—Kenneth John Roy, Dundee; Robert Atkinson Hudspeth, Newcastle-on-Tyne; Albert Leeming, Lancashire; Arthur Heron, Edinburgh; Alexander Cromar, Aberdeen; and Frederick Cornel Dopson, Liverpool.

LIST of Surgeons on Probation of the Medical Staff of the British Army who were successful at both the London and Netley Examinations.

July 30th, 1894.

No.	Name.	Combined Marks.	No.	Name.	Combined Marks
*1.	Evans, P.,	5400	6.	Buist, J. M.,	4576
†2.	Milner, A. E.,	4734	7.	Walker, J.,	4446
3.	Morgan, C. K.,	4666	8.	Dove, F.,	4340
4.	Silver, J. P.,	4633	9.	Thom, G. St. C.,	4207
5.	Vaughan-Williams, H.,	4596	10.	Sweetnam, S. W.,	3940

* Gained the Montefiore Medal and Prize of 20 guineas, and the de Chaumont Prize in Hygiene.

† Gained the Montefiore second Prize.

LIST of successful Candidates for Commissions in the Medical Staff of Her Majesty's Army at the recent Examination in London.

Order of Merit.	Names.	Number of Marks.	Order of Merit.	Names.	Number of Marks.
1.	Howell, H. A. H.,	2445	7.	Profeit, C. W.,	2075
2.	Lawson, D.,	2270	8.	Whitehead, J. H.,	2013
3.	Harrison, W. S.,	2260	9.	Tomlinson, H. P.,	1999
4.	Steel, E. B.,	2178	10.	Kiddle, F.,	1986
5.	Perry, S. J. C. P.,	2168	11.	Murison, J. A.,	1978
6.	Haddon, H. E.,	2088	12.	Heaton, A. F.,	1940

NOW that small-pox is in our midst, it may be well to remember that John of Gaddesden wrote a quaint book in which he recommended, in the treatment of small-pox, that so soon as the eruption has appeared, "cause the whole body of your patient to be wrapped in scarlet cloth, or in any other red cloth, and command everything about the bed to be made red. This is an excellent cure."

THE POCKET COCAINE SPRAY (Burroughs, Wellcome, & Co.)—All the most valuable narcotic and anæsthetic drugs are liable to be abused by being used to excess. To this rule cocaine is no exception, and the indiscriminate use of it even in the form of spray may produce toxic effects, and occasionally result in cocainomania. To prevent the use of too great quantity, and indeed to give the physician a certain amount of control, Messrs Burroughs & Wellcome have devised a compact and ingenious little pocket cocaine spray. A curved tube, with an indiarubber cap to draw up and eject the solution, is accompanied by the familiar glass pestle and mortar, in which tabloids containing each an accurate and precise dose of cocaine can be prepared for use in the spray. Of course, the patient may use or the physician may order as many tabloids as he likes; but it is an advantage to have precision in the amount, so that the physician knows what he is ordering, and the patient can only exceed that amount at his own peril by exceeding the order.

HERNIA is a surgical malady so common, so annoying, and if neglected so dangerous, that it is not surprising to find that the ingenuity of surgical mechanics is constantly taxed to improve and render perfect the instruments required for safety and palliation. We have received from the Link Shell Truss Co. a specimen of a new patent form of Truss, which certainly presents some ingenious modifications tending in the direction of combining lightness with strength, coolness for ventilation purposes, and considerable flexibility. Experience on many cases can only test the value of this new method, but if properly fitted and of sufficient strength the Link Shell Truss promises to suit some cases exceedingly well.

AMPUTATIONS PROTHETICALLY CONSIDERED.—In the *New York Medical Journal* for January last, this subject is discussed by Mr George E. Marks, M.A. It is refreshing to find an instrument-maker who advocates from his point of view what surgeons have long thought to be best, *i.e.*, " least sacrifice of parts." Mr Marks recommends partial foot amputations when they can be carried out, and finds a stump through the cancellous ends of a bone better than one through the shaft, and, at the knee, a disarticulation better than a section through the condyles. That view has been repeatedly urged in this Journal against the opinion of certain artificial limb makers both in Great Britain and America, who wish surgeons as a primary condition to make room for their special mechanical contrivances.

APOLLINARIS.—The fame of this natural effervescent table water is world wide, and its freedom from disease germs has been established beyond dispute. Its richness in natural carbonic acid gives it great advantages over all artificial products in this line, and its agreeable medicinal qualities are now so thoroughly appreciated that they do not require to be specifically mentioned here. We would, however, call attention to the fact that important testimony has been borne to the circumstance that while the mineral water in rising from its very deep rocky source unavoidably parts with much of its carbonic acid, that is recaptured by means of proper machinery and reunited with the water. Our object in referring to this point at present is to remove as far as possible some misapprehension that has arisen on account of the strong effervescence of the bottled Apollinaris.

TEA "TABLOIDS."—We have received from Messrs Burroughs, Wellcome, & Co., London, a box of their "Tea Tabloids." These are tabloids of compressed tea. Each tabloid is sufficient for a cup of tea, which may be prepared in three minutes. This is a very excellent preparation, and will be found of the greatest convenience to sportsmen, travellers, etc.; and when made of the best tea will be sure to be greatly appreciated and much used.

MIGRANIN.—We have also received from the above firm a specimen of the new medicine called "Migranin,"—a substance much recommended in Germany in migraine and various forms of headache. It is said to be citro-caffeine and antipyrin, but more probably a mixture of citric acid, caffeine, and antipyrin. It is recommended in doses of 17 grains dissolved in water,—repeated, if necessary, every two hours. It is worthy of an extended trial in these cases.

CURTIS'S MEAT JUICE.—Messrs Curtis & Co., London, have sent us a specimen of their well-known Meat-Juice, a preparation which we can highly recommend to our readers.

PUBLICATIONS RECEIVED.

EDWARD T. BLAKE, M.D., M.R.C.S.,—Myxœdema, Cretinism, and the Goitres. John Wright & Co., Bristol, 1894.

JOHN B. CHAPIN, M.D.,—Annual Report of the Department for the Insane of the Pennsylvania Hospital for year ending 25th April 1894. Philadelphia, 1894.

J. A. DEMBO, M.D.,—The Jewish Method of Slaughter compared with other Methods from the Humanitarian, Hygienic, and Economic Points of View. Translated from the German, with the Author's Amendments. Kegan, Paul, Trench & Co., Lond., 1894.

HENRY J. GARRIGUES, A.M., M.D.,—A Text-Book of the Diseases of Women. Henry Kimpton, Lond., 1894.

Guy's Hospital Reports. Edited by W. HALE WHITE, M.D., and W. H. A. JACOBSON, M.A., M.Ch. Vol. 50. J. & A. Churchill, Lond., 1894.

ERNEST HART, D.C.L.,—On the Use of Opium in India. Smith, Elder, & Co., London, 1894.

NORMAN KERR, M.D., F.L.S.,—Inebriety, or Narcomania; its Etiology, Pathology, Treatment, and Jurisprudence. Third Edition. H. K. Lewis, London, 1894.

E. MARCHIAFAVA, M.D., and A. BIGNAMI, M.D.,—On Summer-Autumn Malarial Fevers. Translated by J. HARRY THOMPSON, A.M., M.D. The New Sydenham Society, London, 1894.

R. SYDNEY MARSDEN, D.Sc., M.B., etc.—Report on the Sanitary Condition of the County Borough of Birkenhead.

Medical and Surgical Reports of the Boston City Hospital. Edited by DAVID W. CHEEVER, M.D., G. B. SHATTUCK, M.D., and ABNER POST, M.D. Boston, 1894.

A. STANFORD MORTON, M.B., F.R.C.S. Eng.—Refraction of the Eye; its Diagnosis and the Correction of its Errors. Fifth Edition. H. K. Lewis, Lond., 1894.

WM. M. POWELL, M.D.,—Saunders' Pocket Medical Formulary. Second Edition. Henry Kimpton, Lond., 1894.

PURNA CHANDRA SAHA,—The Illustrated Hindu Medicinal Plants. The Indian Drugs Supply Co., Calcutta.

Sixty-seventh Annual Report of JAMES MURRAY'S Royal Asylum, Perth, 1894.

The Institute of Chemistry of Great Britain and Ireland: Regulations for Admission, and Register, 1894-95.

Thirty-sixth Annual Report of the General Board of Commissioners in Lunacy for Scotland. 1894.

Transactions of the American Orthopedic Association. Seventh Session. Vol. VI. Philadelphia, 1894.

Transactions of the Obstetrical Society of London. Vol. 36, Part ii.

J. BATTY TUKE, M.D.,—The Insanity of Over-Exertion of the Brain. Oliver & Boyd, Edinburgh, 1894.

Part First.

ORIGINAL COMMUNICATIONS.

I.—ON THE CAUSATION OF THE SACCULATED PREGNANT UTERUS.

By J. Halliday Croom, M.D., F.R.C.P. Ed., F.R.S.E.

(*Read before the Obstetrical Society of Edinburgh, 9th May* 1894.)

A sacculated pregnant uterus occurring in the later months of gestation is by no means a frequent occurrence, and the difficulties associated with the diagnosis are so great that I have thought it well to describe four cases which I have met with lately.

The condition has been described under various names,—*e.g.*, retroversion of gravid uterus at term, sacciform uterus, and sacculated uterus. Merriman, in his work *A Synopsis of the Various Kinds of Difficult Parturition*, says "that he has had opportunities of being acquainted with two cases of that peculiar and unusual position of the uterus in which the os uteri is projected so high above the symphysis pubis as to be beyond the reach of the finger, and the body of the uterus so completely fills up the back part of the pelvis that the sacrum cannot be touched."

In one case the situation of the patient at the first seemed inexplicable, and she continued several days in labour; but the gradual efforts of Nature at length completed her delivery by restoring the womb to nearly its natural situation. She recovered, but the child was dead-born.

A second case recorded by Merriman was as follows:—"Pains and discharge of liquor amnii. Per vaginam, whole of back part of pelvis filled up by a globular tumour and no os uteri felt. Per rectum, tumour made out to be uterine. Patient continued with pains, and on the following day the tumour descended and patient had convulsions. On 18*th* and 19*th* no change. On 20*th*, on passing finger above pubis, evidence of a show, but os could not be felt. On 21*st*, tumour ascended above brim of pelvis and putrid head of fœtus descended, and os became evident. Labour ended by craniotomy." Merriman further adds: "These cases, I conceive, establish the fact that a retroversion of the uterus may exist at the full term, and, if I mistake not, go far to prove that many cases of supposed extra-uterine gestation were in reality cases of retroverted gravid uterus." He further cites a case where a fœtus was removed through the posterior vaginal wall, supposed to be a case of extra-uterine pregnancy, which, however, merely turned out to be a case of retroverted uterus. From Merriman's time till now cases of this abnormality have been recorded by Oldham, Reid, Duhrssens, Sperber, and others.

The following four cases have come under my own personal observation:—

CASE I.—A multipara of 35 years of age was sent to me supposed to be suffering from a large ovarian tumour. On examination I found a large semi-solid irregular mass filling up the abdomen, and reaching half-way between the umbilicus and ensiform cartilage. On the left side below the umbilicus the mass seemed softer, but with this exception the whole tumour seemed one mass, and had all the characteristics of a semi-solid ovarian. There were no auscultatory sounds of any kind, and the woman gave a history of suppressed menstruation for over a year. Per vaginam, the pelvis was filled up by an elastic bulging mass with a somewhat irregular surface. No trace of a cervix uteri could be found even after the most careful examination under anæsthesia. Under these circumstances, I think I was more than justified in coming to the conclusion that the patient was suffering from a large semi-solid sessile ovarian tumour. Indeed, the absence of the os,—the presumption being that the uterus was tilted upwards and forwards, as is so often the case in sessile tumours,—the absence of auscultatory sounds, the menstrual history, and the physical examination of the tumour, rendered no other diagnosis possible. I accordingly operated, and on opening the abdomen found, as I expected, a large semi-solid ovarian tumour. On attempting to remove it, however, I found a second tumour on the left side, reaching up to near the umbilicus, unconnected with the ovarian mass. Its real nature I at first did not recognise. The ovarian tumour was pediculated and removed without any great difficulty. The fact of its being pediculated showed that it had no relation to the pelvic mass below. The point, however, of main interest is this, that projecting from the lower edge of the ovarian tumour there was a hard solid projection firmly impacted against the soft mass to which I have just referred, and slightly adherent to it. This projection pressed over the brim of the pelvis, deeply indenting and dividing into an upper and a lower half what turned out to be the pregnant uterus.

After recognising the condition of matters, I removed the ovarian tumour. Two days afterwards the patient showed signs of labour. I examined her per vaginam, and could just manage to reach the os and feel the projecting head. Owing to the abdominal wound and recent operation, I dilated as rapidly as I could, and delivered with forceps a fœtus between six and seven months old. In this case the lower segment of the uterus contained the head, and the upper the trunk and the extremities.

The cause producing this sacculated condition was obviously the growth of the ovarian projection *pari passu* with the development of pregnancy.

Case II. illustrates the production of this abnormality from a different cause. In 1886 I saw a patient suffering from a large pelvic abscess which was pointing through the vaginal roof. She had missed two periods, supposed to be due to exhaustion and anæmia consequent on the abscess. The abscess cavity was drained, and patient quite recovered. I heard nothing of her again for seven months, when I was asked by her medical attendant to see her, as she was in labour, and he could find no os. We found a tumour, evidently the pregnant uterus, reaching as far up as the umbilicus, and a round, firm, solid mass occupying the vagina. Under an anæsthetic I could just feel the posterior lip of the cervix. It was quite hard and fixed. I waited some little time, but the cervix, which was hard and indurated, showed no symptoms of dilating, and her previous abscess in the pelvis and subsequent adhesions did not warrant one in using any great effort to pull the cervix into position. There was, therefore, no alternative but to open the abdomen and extract the fœtus. This offered no difficulty except one, viz., that I had some trouble in pulling the head, which was large and somewhat hydrocephalic, out of the cavity of the pelvis. The child was dead, and the mother recovered from the operation; but later on, about the second week, she developed peritonitis, probably septic in origin, and died of pneumonia.

Dr Reid of Glasgow communicated a somewhat similar case to this Society, which he designated as "labour obstructed from an unusual cause." In his case the placenta occupied the lower uterine segment, and the cause of the displacement he attributed to adhesions consequent upon an old pelvic inflammation.

Case III.—A third case was sent to me by Dr M'Kercher, which serves to illustrate still further the method by which this anomaly is produced.

A multipara of 44, supposed to be suffering from an ovarian tumour, was sent here for operation. I found a tumour, somewhat irregular in shape, occupying the abdomen and reaching as far up as the umbilicus. The vagina was likewise filled by a large rounded tumour. No cervix uteri could be anywhere detected, and as there was no auscultatory sounds to be heard except a very faint souffle, as the patient had had irregular hæmorrhages, and as the tumour had grown rapidly, I arrived at the conclusion that she was suffering from a sessile ovarian. I accordingly opened her abdomen, and to my surprise found a pregnant uterus. Before closing the wound I was interested to know the cause of what was obviously a sacculated uterus. The only abnormality I could discover was a fibroid tumour in the anterior uterine wall, which by impinging on the brim of the pelvis had prevented the lower uterine segment rising. I very gently freed this, and closed the abdomen. Four days afterwards the woman was delivered with the greatest ease, the cervix coming into its proper axis. After the birth of the child the uterus again became retroverted, and there was some difficulty in removing the placenta.

Duhrssens records a case of gravid retroflexion at the sixth month which was associated with a soft fibroid in the anterior wall. It was partially replaced, and a subsequent laparotomy was performed, as he mistook the fibroid for an ovarian tumour. After removal of the fibroid, the woman aborted and recovered.

Sperber relates a case of partial retroflexion at the seventh month, there being no fœtal parts in the pelvic portion. All the symptoms of incarceration were present at the seventh month, along with well-marked uterine pains, when curiously enough the uterus righted itself, and the pregnancy went on to full term.

CASE IV.—The counterpart of the case I have just narrated, which simulated a sacculated uterus, was under my care in Ward 28 in December 1893. She was sent in by Dr Smith of Grahamstown. On examination we found a large pelvi-abdominal tumour reaching as far up as the umbilicus and filling up the vagina completely. No cervix could be detected. The tumour filled the whole false as well as true pelvis. On the left side it was hard and nodular, but on the right side, however, it was quite soft, and both a uterine souffle and a fœtal heart could be detected in that region, the vaginal part being firm and solid. It was therefore obvious that one had to deal with a pregnancy and a group of uterine fibroids. A large fibroid mass occupied the cavity of the pelvis, completely obliterating the os. On Christmas Eve the patient went into labour, and as labour went on, the tip of the finger could just reach the os above the pubis. Delivery *per vias naturales* was obviously impossible. Cæsarean section was performed. Unfortunately, the patient died some days later, partly from hæmorrhage and partly from septicæmia. The fœtus also was dead.

The last case to which I refer, and which I regarded as a sacciform uterus, passed from my hands to those of Dr Barbour. It proved to be an extra-uterine pregnancy, and the case is recorded by Dr Barbour in detail.

It seems to me that the main difficulty is to differentiate this form of uterus from a sessile ovarian tumour, and where the auscultatory sounds are wanting, as occurred in two of my cases, the difficulties are practically insurmountable, because it must be borne in mind that the abdominal portion of the uterus is much more fixed than usual, and is generally more or less deflected to one or other side.

II.—ON SYPHILITIC NODOSE PERIARTERITIS.

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The object of this communication is to draw attention to the existence of a variety of arterial disease specially affecting the adventitial sheath (in the form of either nodular swellings or diffuse thickenings), which has been, in this country at least, not sufficiently recognised by pathologists; to show the ætiological relationship of some of the forms of this affection to constitutional syphilis; and to inquire whether it may not be possible, in some cases, to diagnose its presence during life.

Nodose periarteritis, as the condition has been very happily termed, can hardly be said to have found a place in English text-books of pathology. So far as the writer is aware, the best short reference to it is to be found in Ziegler's *Lehrbuch der Path. Anat.*, seventh edition, vol. ii. p. 67, where it is referred to as "a peculiar but as yet imperfectly explained process, which produces a cellular infiltration and proliferation of all the coats of the vessels, separating and causing limited necrosis of their elements; . . . . and as being associated with thrombosis, aneúrismal dilatations, and in its severer forms with inflammations of the surrounding tissues." There is no reference to its connexion with syphilis, although it is pointed out (p. 66), in the description of obliterative endoarteritis due to syphilis, that one of its distinctive features is the cellular infiltration of the adventitia which accompanies it. Most other text-books overlook the condition altogether, and those that note in connexion with obliterative endoarteritis any infiltration of the outer coats, appear to regard this as subsidiary or secondary to the endoarteritis (*Transactions of the Pathological Society of London*, 1877). This is presumably in large measure due to the comparative rarity of the periarterial disease as distinct from obliterative endoarteritis, and to the influence of the monograph of Heubner on the syphilitic affections of the cerebral arteries, in which the infiltration of the outer sheath is not even mentioned.

Several papers, however, have appeared in various journals which give a more or less exhaustive account of the histological changes, and at the same time teach that there are at least two, and possibly more than two, sets of causes of the disease; while they leave little doubt that one of these causes is constitutional syphilis.

Before discussing these papers, it may be well to state here the details of two cases which have come under the writer's notice,—one after death while he was pathologist to the Edinburgh Royal Infirmary, and the other during the last three days of life.

Case I.—B. D., aged 37, the male attendant in the Lock Ward, Royal Infirmary, died January 23, 1887. Dr MacGillivray, under whose care he was, gave the following history along with the kind permission to publish the case:—Syphilis acquired between two and three years before death. Secondary symptoms severe, accompanied with a pustular rash. Tertiary symptoms appeared about eighteen months after the original infection, and were mostly limited to the nervous system,—partial paralysis of the right side, which improved under large doses of iodide of potassium; subsequently paresis of both legs, and some affection of speech (anarthria?); then diplopia and inability to turn the right eye inwards were developed. Improvement followed the use of iodide of potassium; but diplopia afterwards returned, and the left pupil dilated and became immovable. (There was probably also external ophthalmoplegia.) Death occurred somewhat suddenly, in six hours after development of tonic and clonic convulsions, which alternated from one side of the body to the other. The results of the post-mortem examination (which was held on January 25) were, omitting unimportant details, as follows:—

Ecthymatous eruption on forehead, near hairy scalp; slight external strabismus; left pupil considerably larger than right. Inner surface of frontal, parietal, and occipital bones had a grooved appearance along the lines of the finer vessels. The bones generally seemed to be too vascular. Considerable amount of fluid in subarachnoid space at base of brain; arteries at base were greatly altered. The basilar, posterior communicating, and posterior cerebral arteries were thickened irregularly, and had a whitish, soft, almost succulent-looking wall. On the vertebral arteries near their termination in the basilar were several external nodular thickenings, resembling, in miniature, the gnarled masses which are seen on elm trees. On some of the smaller branches of the basilar artery to the pons there were small, either fusiform or rounded, swellings. The pons itself was somewhat swollen and soft. Both optic nerves were also too large and soft. Right third nerve a little swollen, gelatinous looking, and of a more pinkish colour than its fellow.

The lungs were both greatly congested; the heart showed much fat (fatty infiltration?) under the pericardium over the right ventricle; valvular orifices all competent. Left ventricle dilated; wall not thickened; in a state of advanced fatty degeneration (apparently the result of endoarteritis in coronary artery, but this point not subsequently established). Papillary muscles atrophied. No change of importance was found in the other organs, with the exception of the spinal cord (which was found somewhat softened) and its membranes. On the inner surface of the dura mater, in the cervical region, were a considerable number of small, wart-like excrescences.

The microscopic examination of the arteries at the base of the brain showed that there was only a very slight trace of obliterative endoarteritis (Plate I., Fig. 1, drawn from a transverse section of the basilar artery, stained with alum carmine); but that, on the other hand, the adventitia is enormously thickened. This thickening is not uniform over the whole circumference. On one side it has developed so as to form a distinct node, while on the other it is only slightly thicker than the normal adventitia. The margins of the node slope gradually away into the thinner adventitia; but in some other sections the transition was still more abrupt, so that the node was even more apparent than in Fig. 1. In a third series, observed specially in the smaller vessels derived from the basilar, the nodular swelling was not so pronounced, because the thickening all round the vessels was more nearly uniform. The infiltration is composed of small round and fusiform cells. These are here and there aggregated into dense masses, especially round the vasa vasorum. In other foci they show a commencing caseation, indicated by a blurring of the outlines, and an indistinctness of staining of the nuclei of the cells. The muscular coat is generally normal, but it shows one or two small foci of small cell infiltrations. Its elastic lamina is quite intact. The pia mater was not specially altered, so that one cannot suppose that the affection of the arteries was secondary to a specific leptomeningitis.

Sections of the crura cerebri showed that there was a line of softening along each side of the artery to the nucleus of the third nerve, and the nucleus itself was entirely destroyed by softening. The capillaries and smaller arteries in the crura showed marked perivascular cellular infiltration.

Case II.—J. B., aged 35, an obstetric nurse, was, on the recommendation of Dr Whitelaw of Portobello, admitted to Ward 25 of the Royal Infirmary, September 18, 1892, suffering from paralysis of the upper and lower extremities, and a peculiar form of disturbance of speech,—symptoms which were said to have developed on the day of admission. When examined on the following day, it was difficult to get a connected history from her. Her expression was quite that of an intelligent person, but indicated great mental distress. She was quite conscious, and answered questions put to her after some delay and in a few words, which were uttered in a peculiar, slow, wailing manner, in a loud tone, with frequent interruptions. The manner of speech was so strange that the students who were present at the clinique freely expressed the opinion that she was hysterical. The movements of the ocular, facial, and of the head and neck muscles were quite normal. There was some difficulty in protruding the tongue, which, however, could be passed beyond the lips and in the middle line. The arms were kept with the hands crossed in front of the abdomen, the elbows being slightly flexed, the wrists semi-flexed, and the fingers flexed at the two distal phalangeal joints. The flexion could be slightly increased on voluntary effort, but the extensor muscles were completely paralyzed. Slight movements were made at the shoulders and elbows on voluntary attempts to shut the hand. The right hand was slightly more powerful than the left. There was slight resistance to passive movements at both shoulders and elbows. Both arms and forearms were spare. The faradic reactions appeared to be slightly diminished in both arms. Elbow and wrist jerks were present on both sides. The lower limbs were extended, the toes pointed, but not everted. The only voluntary movements in the lower limbs were slight flexion of the toes. The limbs were thin, but no special wasting was noted. There was increase of knee-jerk on both sides, but no ankle clonus. The faradic reactions seemed slightly diminished. There was retention of urine. After being drawn off by catheter, it was found to be normal. Cutaneous sensibility was everywhere normal.

A vague history of possible syphilitic infection was obtained, but its date could not be ascertained. A few brownish pigmented spots on the outer sides of the elbows and knees, and on forearms and legs, were regarded by Dr Norman Walker, who kindly saw the patient with me, as confirmatory of this history. No glandular enlargements were found anywhere. The temperature on the evening of admission was 99°·4. On the following day (19th September) it was 97°·6 in the morning and 100°·4 in the evening. On 20th September patient appeared distinctly better, was more cheerful, and could move her hands slightly better. Had slept well. Temperature: morning 100°, evening 101°·4. On 21st September, at the Resident Physician's visit at 10 A.M., temperature 100°·2. Hands could not be moved so well as yesterday. At 1 P.M. temperature had risen to 101°·8; pulse, 118; respirations, 48. Coarse râles in trachea; moist crepitations, with no evidence of consolidation in either lung. Neck was paralyzed; tongue could not be protruded beyond lips; ocular and facial muscles normal. At 6.45 P.M. temperature 103°·4; at 8 P.M. it was 104°·2; pulse, 142; respirations, 60. At 10 P.M. breathing stopped suddenly, the pulse continuing fully one minute after its cessation.

The case presented so many features in common with the one already described, that it seemed most probable that the cause of death was of a similar nature; and an opinion was expressed before the post-mortem examination was made, that there was in all likelihood syphilitic periarteritis of the arteries at the base of the brain involving the centres in the medulla below the nucleus of the facial nerve, and leading to softening of the pyramidal tracts.

After the post-mortem examination the following additional facts were obtained, through the kindness of Dr Sharkey's Resident Physician:—

J. B. had been treated for secondary syphilis at Soho Hospital for six weeks during March and April 1892; the date of the primary infection having been apparently December of the previous year.

May 10.—Three weeks after leaving off mercurial treatment she noticed loss of power in her left arm.

May 29.—She could not speak properly for a few hours.

May 31.—Admitted to St Thomas's Hospital with syphilitic psoriasis of trunk, face, and extremities, which was said to have existed eight or nine weeks. Both tonsils were ulcerated. Right side of face was paretic; tongue protruded to right side. Grasp of left hand very weak; that of right hand stronger, but not yet normal. Trunk muscles very weak. Could not raise herself from the bed. Neck muscles not powerful enough to support the head. Left leg weaker than the right, but both affected. No true aphasia (evidently some speech difficulty—A. B.) No loss of sensation anywhere. Does not always understand what is said to her. Requires to be fed.

June 3.—Very drowsy; unconscious micturition. Right optic neuritis, with small hæmorrhages; left optic neuritis; slight swelling of disc.

June 6.—Paralysis much worse, is general. Great pain in neck; no loss of sensation anywhere.

June 7.—Paralysis of neck complete. Patient clear and quite intelligent.

From this date rapid improvement till complete recovery. Exit from hospital on August 18, with strict injunctions to continue her medicines, and always to keep her prescriptions (iodide of potassium and perchloride of mercury) to show on any future occasion.

Her sister stated that she then came to Portobello; that while there she was able to walk about, but that she still preserved some difficulty in speech. She remained fairly well till two days before admission, when she began to complain of pain in the back of the neck. On the evening before admission she felt her legs weak; but next morning—*i.e.*, on the day of admission—she was able to get out of bed before the paralysis came on.

The post-mortem examination was made by Dr Muir on September 23, 1892:—

Body fairly well nourished; rigidity fairly well marked in upper and lower limbs; lividity well marked posteriorly. Slight discoloration over abdomen (due to putrefaction). Left pupil points a little more upwards and to the left as compared with the right.

Head.—Dura mater normal. Convolutions at vertex fairly normal. At the base of the brain there is found, on the anterior surface of the pons and medulla, a thin, soft, gelatinous-looking layer of exudation, showing at parts a fibrinous appearance, especially at the anterior surface of the pons. Behind the optic chiasma there is considerable subacute thickening of the membranes. The basilar and vertebral arteries are the seat of extensive disease, their walls being thickened somewhat irregularly, with small, somewhat greenish-looking patches on their outer coat. The branches of these vessels are more rigid than usual. They are thickened and translucent, and also show little patches of yellowish translucent thickenings. The exudation is found round most of the cranial nerves, but in no case is fibrinous. The middle and anterior cerebral arteries show a little thickening of their coats, but not nearly to the same extent as the basilar.

The brain substance is firm and pasty; puncta cruenta well marked; grey matter of cortex deeply congested, especially in deeper layers, where it is of a rose-pink colour. The grey matter in the basal ganglia is greatly congested. The grey matter in the pons and medulla is greatly congested, and in the medulla this is rather more marked on the left side. In the centre of the pons, just anterior to the fillet on the left side, is a small spherical spot, apparently a minute softening, ⅛ of an inch in diameter. The spinal cord showed marked congestion of the leptomeninges. The grey matter was much congested in places, and the white matter somewhat softened.

The pons varolii and medulla oblongata were prepared for microscopic section by being hardened in Müller's fluid and imbedded in celloidin in the usual manner. Changes were found in the leptomeninges, arteries, veins, capillaries, and also in the medulla and in the nerve-roots arising therefrom.

Leptomeninges.—The pia arachnoid on the anterior and lateral aspects of the medulla and on the anterior aspect of the pons showed a considerable amount of infiltration. The thickening was not by any means uniform, being almost quite absent here and there, and in other situations so great in amount as almost to constitute a nodule. It was due mainly to small round cells lying in the interspaces between the fibres; where these were present in very large masses the membranes presented the nodular appearance above referred to. In addition to these cells there was also a considerable amount of fibrin in layers between the fibres. The greatest cellular infiltration was in the anterior median fissure and in the neighbourhood of small arteries and veins in the membranes (Plate I., Fig. 2). This condition evidently corresponds very closely to that termed *méningo-myelite diffuse embryonnaire* by Gilbert and Lion.

The *arteries*—namely, the vertebrals, the basilar, and the small branches arising from them and passing along the leptomeninges—showed well-marked periarteritis of a character somewhat different from that described in Case I. It was in part diffuse and partly nodular,—the difference being due to the greater or less uniformity in the thickness of the infiltration of the adventitia; the nodular appearance being due to a much greater amount of infiltration at one part of the circumference than at another. The infiltration (Plate II., Fig. 1) was composed entirely of round and spindle cells with deeply staining nuclei. These cells were very closely packed in the sheath, and in some parts, especially round its small capillaries, were collected in still denser masses, which might almost be termed miliary gummata. They differed from the previous case, however, in this respect, that they did not show any tendency to caseation in any spot. The muscular coat was infiltrated in many foci by similar round cells. The elastic lamina seemed intact, neither granular nor split into layers. In the intima there was a certain degree of endoarteritis obliterans. Only in one or two small areas was this at all pronounced, elsewhere it was either entirely absent, or (Plate II., Fig. 1) represented by two or three rows of endothelial-like cells. Where the endoarteritis was most marked it was due to round, deeply-staining cells, as if it had developed rapidly. No capillaries were found in the thickened intima. Recent thrombi were found at several places in the arteries, especially in the smaller branches.

The infiltration of the adventitia was not limited to the arteries in the meninges. It extended along the minute branches within the medulla, forming very prominent rings of deeply-staining cells in sections stained with Ehrlich's hæmatoxylin. These branches were generally thrombosed (Plate II., Fig. 3).

The veins of the meninges had in their outer coats an infiltration almost as marked in degree as in the arteries, and of a very similar nature—a periphlebitis diffusa—the adventitia (Plate I., Fig. 2) being thickened uniformly by deeply-staining round cells. There were in many places hæmorrhages, some of considerable extent, in the outer sheath. The middle and inner sheath were for the most part normal. The majority of the veins were thrombosed.

The *capillaries* in the outer coat of the arteries in the meninges have been already referred to as being frequently the centre of aggregations of round cells (early gummata). In sections of the medulla stained by Ehrlich's hæmatoxylin they stood out very prominently, owing to the increased number of nuclei in their walls and in the perivascular lymph spaces.

The *medulla* and *pons* showed a considerable degree of myelitis and softening. Though they were hardened and embedded with great care, it was almost impossible, owing to the friability of the tissue, to cut complete sections. When stained by Weigert-Pal's method, the anterior pyramids became almost entirely decolorised, showing that they were evidently very much degenerated. Other foci in the groove behind the inferior olives, where the meningitic infiltration was most intense, also showed a similar condition. Sections stained by Ehrlich's hæmatoxylin showed that there was a remarkable excess of nuclei, throughout, between the nerve fibres.

The *nerve roots* (of which the drawing in Plate II., Fig. 2, made from a section of the hypoglossal, may be taken as a type) show also a high degree of perineuritis and interstitial neuritis.

The study of the published cases of periarteritis nodosa shows that they may be readily divided into two classes, according as they are or are not due to syphilis.

It is not yet determined whether the non-syphilitic varieties are all due to the same cause. Indeed, no cause has yet been established in any of the cases, but the clinical course and the post-mortem appearances certainly point to an "infective" origin. In most of them there were enlargements of the spleen and liver, granular degenerations in muscle, infarctions in the kidneys, and hæmorrhages into, or erosions of the intestine. This question has been so very fully discussed by Dr Morley Fletcher (*Ziegler und Nawerck's Beiträge*, vol. xi.) that it is unnecessary for me to enter into it in detail. The histological changes of the non-syphilitic forms differ considerably from those in the syphilitic cases, and it is remarkable that in the former, with one exception, the cerebral arteries escape, while in the latter it is these alone that are affected.

Thus, in Kussmaul and Maier's case (*Arch. f. klin. Med.*, Bd. i.) there were minute nodular, aneurism-like swellings of the smaller arteries of most of the organs (with the exception of the brain) and the muscles of the body. These nodules are due to cellular infiltration of the outer and middle coats, with subsequent degenerative changes. The infiltration sometimes spread to the intima, and induced thrombosis in the vessel. There were also infarctions in the kidney, with albuminuria, hæmorrhagic erosions in the stomach, and hæmorrhages into the intestine. The voluntary muscles showed whitish spots (due to the arterial changes), resembling the nodules in thickness macroscopically, while the fibres were cloudy and swollen.

2. In Weichselbaum's case (*Allgem. Wiener medic. Zeitschrift*, 1877) there were numerous little aneurisms full of thrombi on the small arteries; dysenteric ulcers in the colon; acute liver abscess; slight localized peritonitis and pleurisy.

3. In Meyer's case (*Virchow's Archiv*, Bd. lxxiv.) there was enlargement of liver and spleen; infarcts in the kidney; numerous small nodular thickenings on the small arteries, but none on the cerebral arteries. This patient had had syphilis; but after death no trace of it was found, unless the arterial change be regarded as such.

4. In Eppinger's case (*Pathogenesis, etc., der Aneurysmen*), that of a girl of 10, there were minute nodules on the coronary arteries of the heart, but the other arteries were not observed.

5. In Morley Fletcher's case (*loc. cit.*), the arteries of the heart, mesentery, stomach, intestine, kidneys, liver, and spleen presented small nodular swellings, due to localized cellular infiltrations of the intima, media, and adventitia. The spleen and liver were enlarged,

and there were hæmorrhages into the mucous membrane of the stomach and intestine. Fletcher considers that his own case was due to some general infective cause.

If we turn to the syphilitic form of the disease, we find from the recorded cases that the arteries specially involved are those at the base of the brain, more especially the vertebrals, basilar, and the posterior communicating, as well as the smaller branches which arise from them, and also, although probably with much less frequency, the anterior middle and posterior cerebral. The periarteritis may either exist alone, or it may be associated with endoarteritis obliterans. Similar changes may be found in the outer and inner coats of the meningeal veins. Very frequently the vascular changes are associated with a diffuse basal meningo-myelitis, with foci of softening in the nerve centres, and interstitial cellular infiltrations of the cranial nerves.

It would appear that Dr Batty Tuke was the first to observe this periarteritis. In the *Journal of Mental Science* for 1874, he describes an affection of the arteries of the cortex in a case of syphilitic insanity four years after infection, which is undoubtedly a periarteritis. Dr Tuke was good enough to allow me to examine his section of the cortex, and from them it is easy to see that the outer coat is infiltrated with round cells in a more or less uniform manner. A transverse section of one of the arteries in the cortex presented appearances almost exactly like those in the large thickened artery lying immediately under the membranes in Plate II., Fig. 3.

Since then two cases have been described by Baumgarten (*Virchow's Archiv*, vols. lxxvi. and lxxxvi.), one doubtful case by Weichselbaum and Schwostek (*Allgem. Wiener med. Zeitschrift*, 1877), and more recently important papers have been written by Gilbert and Lion (*Archives Générales de Médecine*, 1889, vol. ii.), Lamy (*Nouvelle Iconographie de la Salpêtrière*, Nos. 2, 3, 4, 5, 1892), Raymond (*Archives de Neurologie*, xxvii., 83, 84), and others. Raymond describes appearances which are almost identical with those presented by the writer's second case. From an examination of these cases, and a comparison of them with those described by the writer of this paper, the changes in the outer coat may be divided into three pretty distinct groups.

I. The outer coat is infiltrated more or less uniformly with round cells, but without any, or any markedly evident tendency to degeneration. This group includes the cases described by Tuke, Gilbert and Lion, Raymond, and Bruce (Case II.).

II. The outer coat shows a nodular (or a diffuse) cellular infiltration, with commencing caseation. Bruce's first case of B. D.

III. The outer coat shows a distinct formation of caseous gummata, as well as diffuse periarteritis. This stage is seen in Baumgarten's (*l. c.*) two cases. He describes (and figures) the following conditions in the cerebral arteries in addition to other lesions:—"A number of small yellow or greyish nodules on the arteries at the base of the brain, on the pia mater of the left side of the pons, and scattered singly over the pia of the cerebrum and cerebellum." There were also nodules on most of the cranial nerves. Microscopically the arteries showed an obliterative endoarteritis with giant cells; in the media and adventitia caseating nodules, which may become continuous with the thickened intima. When this is the case, the thickening of the intima is always much less marked than that in the outer coats. There is also a diffuse periarteritis in parts, with, at the same time, a thickening of the intima.

Since these three groups may be regarded as representing three successive stages in the development of a gumma in the outer coat of the artery, one is led to inquire whether there is any marked difference in the interval between the original infection and the appearance of the symptoms, or in the duration of the disease,—if, for instance, the cases included in the first groups appear earlier and run a more acute course than those in the second and third groups.

At present the number of cases is insufficient to enable one to come to a definite conclusion on these points, and it is to be remembered that the rapidity of progress of any case will depend on many factors. One of these is the relation of the affected arteries to centres whose integrity is necessary to life. Thus the diffuse cellular infiltration might continue to extend for a considerable time before it reached an important centre, and thus the affection might run a comparatively chronic course (see Gilbert and Lion, *loc. cit.*); while, on the other hand, the caseating forms might, in the first instance, mainly affect the vessels to the respiratory or cardiac centres, and thus give rise to an illness with an apparently short course. Again, a great deal will depend on the existence or not of meningitis, encephalitis, neuritis, and of intra-vascular clotting. (This has been also considered by Raymond, *loc. cit.*)

It is noteworthy, however, that in the majority of the described cases, when a definite date of infection could be established, the symptoms appeared at a very early period. Gilbert and Lion speak of them as appearing even before the primary manifestations of syphilis have passed off. In the writer's second case they occurred while the patient was under treatment for the skin eruptions about six months after the infection. In his first case they appeared within two years (or perhaps less). In two of Lamy's cases the symptoms appeared within a year after infection. In Batty Tuke's and in one of Baumgarten's cases the syphilis had lasted four years at least (in the other there was no history).

No record of a case has been found in which a definite periarteritis (as distinguished from the periarterial infiltration so

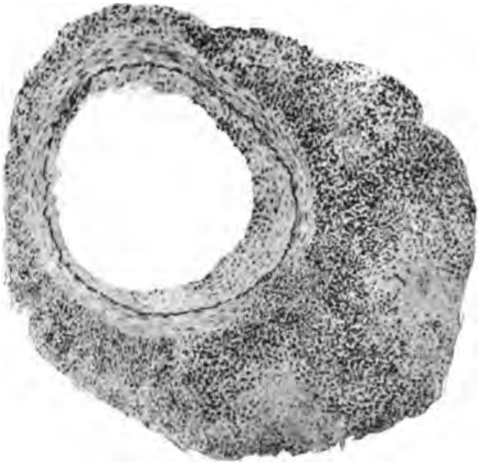


FIG. 1.

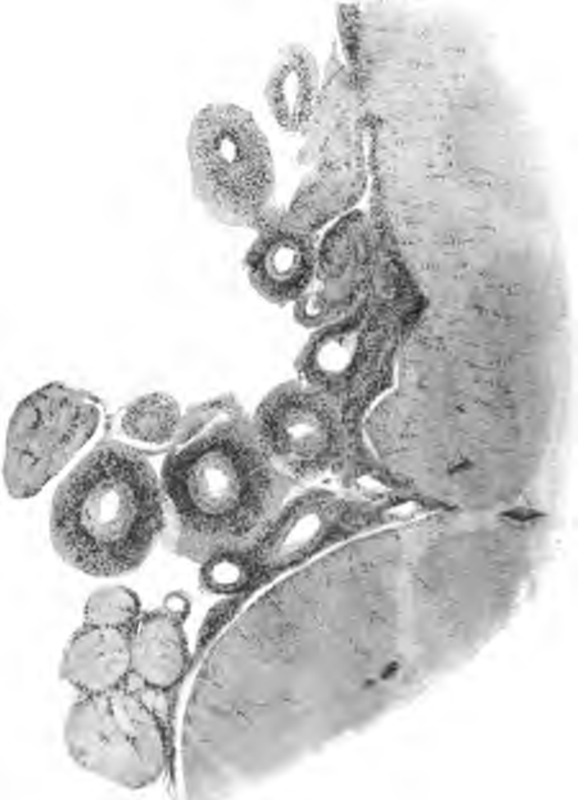


FIG. 2.

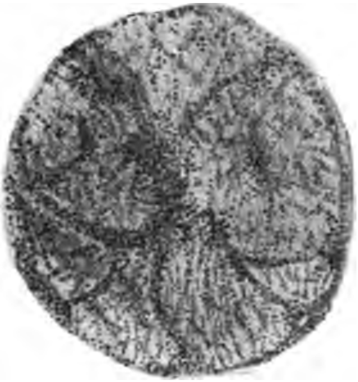


FIG. 2.

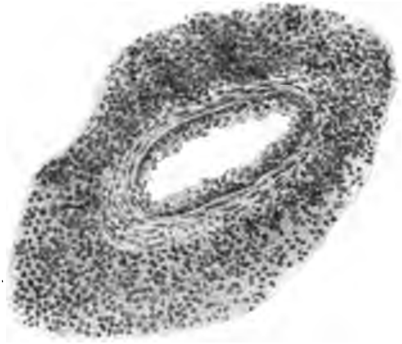


FIG. 1.

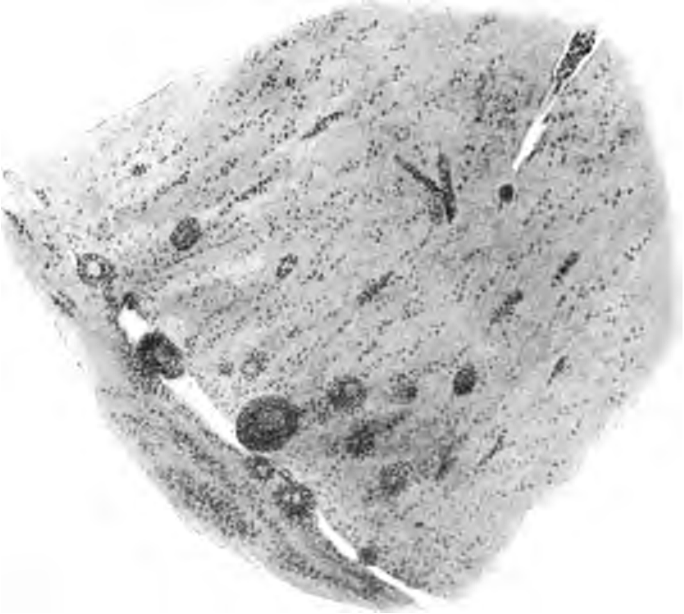


FIG. 3.

often associated with obliterative endoarteritis) has been seen more than four years after the primary infection. It is not meant by this to deny that such cases may occur. Yet it would appear that the earlier the occurrence of cerebral (or spinal) symptoms, the greater the probability that they are associated with periarteritis.

The symptoms of periarteritis nodosa are most various, and the progress of the disease may be one of extreme rapidity, or one lasting for weeks or months. Some of the cases have showed marked and rapid improvement under specific treatment, followed by relapses which have proved speedily fatal. Frequently there are no special premonitory symptoms; or there may be headache, giddiness, or pains in the region of the head and neck. Then there may develop, more or less suddenly, symptoms of mania, convulsions, unconsciousness, paresis or paralysis of the muscles supplied by the various cranial nerves, hemiparesis of arm and leg, complete hemiplegia, or paraplegia. These conditions are the same as those found with ordinary obliterative endoarteritis and its complications, and are probably to be asociated with periarteritis and periphlebitis only when they occur comparatively soon after the disease is contracted.

With regard to treatment, the history of these cases emphasizes the urgent need for persevering with the specific remedies for long periods after the early nervous symptoms have disappeared.

EXPLANATION OF THE PLATES.

Plate I., Fig. 1.—A transverse section of the basilar artery, showing the infiltration of the adventitia with small cells, which in several areas are becoming caseated. The muscular coat at one spot is slightly infiltrated. There is also slight endoarteritis. (Case I.).

Plate I., Fig. 2.—Transverse section of leptomeninges and vessels of medulla, from the groove behind the olive, showing the infiltration of the membranes, the thickening and thrombosis of the veins and arteries, and the interstitial inflammation of the nerves.

Plate II., Fig. 1.—Artery from Case II., showing marked periarteritis, very slight focal infiltration of middle coat, and slight endoarteritis.

Plate II., Fig. 2.—Infiltration with small cells of the perineurium and endoneurium of the hypoglossal nerve.

Plate II., Fig. 3.—Low power view of the membranes and medulla, showing the infiltration of the outer coat of the smaller arteries and capillaries passing into the medulla.

III.—SOME NOTES ON SURGICAL ECONOMY IN HOSPITALS.

By Arthur Neve, F.R.C.S. Ed., etc.

(Communicated to the Medico-Chirurgical Society of Edinburgh by Mr Cathcart, *on 4th July* 1894.)

It will be freely acknowledged that in hospitals economy is secondary to efficiency; and, indeed, that efficiency is essential to true economy. But efficiency may be, and often is, combined with waste and extravagance. If surgeons of British hospitals had to raise and administer the funds as well as care for the patients in their surgical wards, I venture to think they would study both sides of the question, as the surgeons of the Kashmir Mission Hospital have to do.

The cost of dressings has enormously increased with the introduction of antiseptic surgery. Dr Joseph Bell has pointed out, that while in 1854 the surgical dressings, etc., in the Edinburgh Royal Infirmary cost £286, in 1891 they cost £2821, "an altogether astounding increase in expense."

For the sake of comparison I tabulate the statistics of the Kashmir Mission Hospital alongside those of the Edinburgh Royal Infirmary for 1891–92:—

	E. R. I.	K. M. M.
Total operations, . .	2171	2198
In-patients, . . .	4360	619
Average residence, . .	25 days.	18 days.
Cost per patient, . .	£4 7 3½	£0 7 8
Surgical dressings, bandages, etc., . . .	£2821 0 0	about £17 0 0
Mortality, . . .	119	8

It will be at once noticed that a very large number of our operation cases are treated as out-patients. The explanation that such were minor operations would not be altogether correct. The Hospital suburb is always full of our patients, many of whom have religious or social prejudices against becoming in-patients. Four or five cases on whom major operations have been performed are daily brought as out-patients. Apart from the *eye* operations, which bulk so largely (881 cases), about 650 might be reckoned as major operations.

The difference between the cost of the average Scottish and Kashmiri patient is, of course, mainly due to the cheapness of food and the low rate of wages in this country, where rice can be bought for ¼d. per lb., so that £2, 10s. a year would feed an adult Kashmiri. For the same reason wages are low, and the total cost of our seventeen dressers and servants is only £100.

On the other hand, the bedsteads, blankets, sheets, and surgical dressings have to be procured from England, with the extra expense of 5000 miles of sea and 1500 miles of land carriage. Obviously, if we used the same surgical dressing materials in the same proportions as in Scotland, the cost of dressings for the Kashmiri patient would be greater than for the Scottish patient, amounting certainly to not less than £500 instead of the humble £17.

The expense of our surgical dressings may be thus analyzed:—

Bandage cloth, 800 yards, costing £6, 13s. This represents about 2500 bandages, most of which are washed twice, and so represent about 7500 bandages. As we apply not less than 10,000 dressings a year, it appears that the same bandages are sometimes re-applied. The cost of washing them is about £2 a year. If new bandages were each time used, the total cost would be at least three times as great. Bandages from special cases, such as gangrene, erysipelas, or leprosy, are all burnt.

Muslin, for the sawdust pads, of which I give further details below, costs, with the making up, about £4. This makes about 2000 pads, which are rewashed like the bandages.

Cedar sawdust costs about 6d. per cwt. if it has to be bought, but we preserve the sawdust of our own timber used in building. Probably 6 or 8 cwt. of sawdust serves us for the year.

Cotton wool costs about 3d. per lb., and of the local product we use about 100 lbs. for various purposes.

The chief remaining items of expense would be salalembroth wool, about 20 lbs., and a few packets of cyanide gauze; also a few pounds of surgical lint, with the usual et ceteras—protective, macintosh, etc.

The chief requisites in a surgical dressing are that it should be aseptic, antiseptic, absorbent, comfortable, cheap, and easily applied. Of late years salalembroth cotton wool and wood-wool have become the popular and staple hospital dressings, and it may be readily acknowledged that they fulfil satisfactorily most of the chief indications except that of cheapness. Sir J. Lister has pointed out the drawbacks to corrosive sublimate deep dressings; the readiness with which serous discharge neutralizes the antiseptic properties; the over-solubility leading to the mercury being washed out, or to irritation of the skin. For these reasons the cyanide of mercury gauze, which is soft and very absorbent, as well as antiseptically stable, will grow in popularity. But all these materials are expensive. Where, as in the reception of discharges from suppurating joints, or diseased bone, or psoas abscesses, antiseptic and absorbent dressings are needed in bulk, the cost of each dressing is considerable.

If we were to replace all our antiseptic sawdust pads by salalembroth wool, the cost would be about £75 per annum, instead of £4, 10s. The pads are a most efficient and easily applied dressing. Muslin somewhat close in texture, to avoid the sawdust dusting through, is made into bags from 4 or 6 to 12 inches square. These bags are soaked in corrosive sublimate lotion, and dried. Cedar-wood sawdust (or pine sawdust) is also moistened with the lotion and dried. With this the bags are loosely filled, so as, when laid flat, to be from ¾ inch to 1½ inch thick, according to the size of the bag. In applying them we frequently moisten the deeper layer with carbolic lotion.

The pads are admirably suited for use with the zinco-cyanide of mercury. A given quantity of the mercury is stirred into some 1-20 carbolic in a tray, a few drops of aniline dye are added, and the bags are then placed flat in the tray. The sawdust in the bags should not have been medicated previously. The prepared pads may be placed to dry in a special box, or used fresh in their moist condition. It is not necessary to soak the whole bag. The dye shows which is the prepared surface.

Of course these pads can be used, and are indeed usually used, with other materials. For example, if a tumour has been excised and the wound sutured, we then apply two or three folds of cyanide lint (prepared as suggested by Lister), and cover the wound with a prepared cyanide pad. If there were oozing, the pad would, if necessary, absorb 8 or 10 ounces of discharge; and the evenly adjusted pressure of the bag is useful, acting almost like a splint. In dressing an amputation wound the pads would be used below, where most of the discharge will gravitate, while above absorbent wool would be used. For special cases, such as psoas abscesses with abundant discharge, extra large bags are easily provided; and for some cases similar bags, two feet square, are laid in the bed to protect the sheets.

The pads have less drying properties than absorbent wool, which sometimes dries in such a way as to form a crust, under which the discharge is pent up. This never occurs in the pads. The discharge is so uniformly absorbed that usually not a drop of matter will escape to the surface or edge until the entire sawdust is soaked. Here, again, they are superior to absorbent wool, which frequently allows even a small amount of discharge to penetrate directly to the surface instead of diffusing itself. Both the muslin of the bags and the bandages are boiled, washed, and used again. After coming from the wash they are soaked for forty-eight hours in corrosive sublimate lotion, so that there is no risk of sepsis.

These bags are used by us in padding many kinds of splints, especially for Macintyre splints. When once the preparation and use of the bags has become a matter of routine, one finds them *more convenient* than any other dressing for most operation cases.

During the last few weeks, with several hundred operation cases from ovariotomy, hernia, lithotomy, and amputations, to scrapings of ulcers or incisions of abscesses, I do not recall a single case (except eye operations and a few minors) in which bags were not used.

The two following cases may serve as examples of the application of zinco-cyanide sawdust pads:—

A. G., acute suppurative periostitis of femur; operation, August 5, 1893, drained and irrigated; two-thirds of femur bare, and disease is of thirty days' duration, so necrosis seems probable. Applied two pads, and covered with macintosh. Wound dressed August 6th, 9th, 11th, 14th, 17th; dismissed cured August 21st. In this case there was abundant discharge, at first soaking both bags, but it rapidly ceased. Altogether fourteen bags were used, at a total cost of less than 6d. With wood-wool dressings this case would have cost at least six shillings.

M. D., carcinoma of foot; amputation of upper third of leg; dressed August 11th, 14th, 16th, 20th. Altogether six bags were used, a few strips, perhaps half a yard, of (locally prepared) zinco-cyanide lint, and ½ lb. of locally prepared absorbent cotton wool; so that the total cost, including six bandages, six pads of lint, and absorbent cotton wool, did not exceed one shilling.

I have at different times made experiments with the pads prepared in various ways, and then soaked with blood or serum and kept in a warm, moist place. They have been kept for periods up to ten days, re-moistening after a few days, and inoculating with septic pus, but without septic odour; and even blood-clots mixed with the sawdust become dessicated aseptically. These experiments require bacteriological confirmation by cultivation tests, but they agree with the results of clinical observation.

Cotton wool, in the ordinary commercial forms, here costs 3d. a pound; but before being suitable for use, except merely as a padding, it requires to be rendered absorbent. I should like to know a simple way of accomplishing this. After trying various plans, I now merely have it boiled with various alkaline ingredients and soap by the washerman, after which it is carded. It will not sink in water if a pledget is dropped on the surface; but it is suitable for artificial sponges, and if bandaged on a discharging wound absorbs the discharge fairly well.

The dressing of all in-patients is invariably directed by Dr E. F. Neve or myself, and the assistants are taught to re-use any unsoiled portions of the old dressings in the outer dressings. Perhaps this may seem over-economy; but in careful hands, with a knowledge of antiseptic surgery, it is safe.

It would be foreign to my present purpose to go into the subject of simple and readily adjustable forms of splints, although such are a real economy; and it is important that young practitioners should be familiarized with the use of easily obtainable and cheap appliances. We find wooden laths and hoop-iron useful, as they can be readily cut and bent to required shapes. But we also use to a large extent bracketed splints of local manufacture. A Kashmiri-made Macintyre splint costing five shillings is almost indistinguishable from the English article.

IV.—NOTES ON THE DISSECTION OF A CASE OF OSSEOUS ANCHYLOSIS OF BOTH TEMPORO-MAXILLARY ARTICULATIONS.

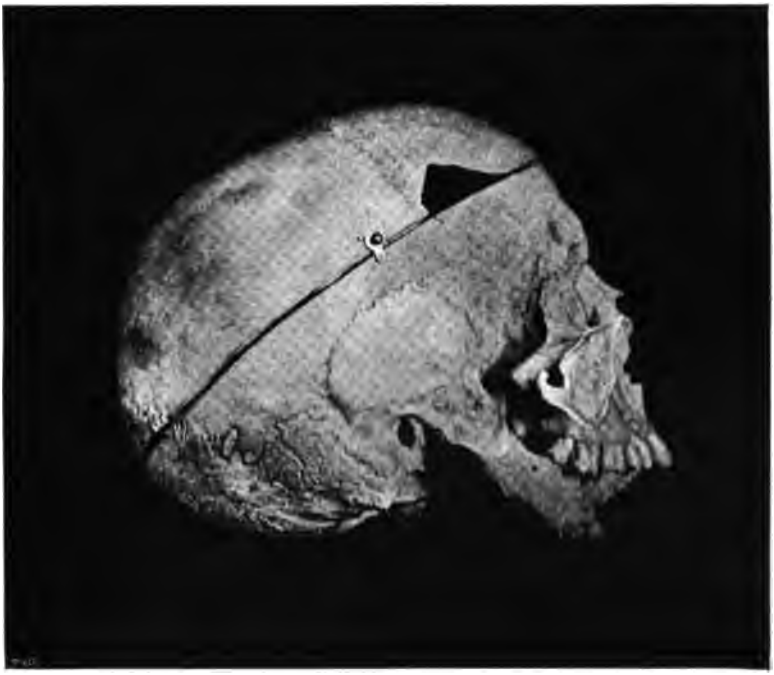
By David M. Greig, M.B., F.R.C.S. Ed., Dundee.

A male subject in the dissecting-room of Dundee University College was found to present a condition of anchylosis of the temporo-maxillary articulations, and for the opportunity of dissecting the abnormal parts I am indebted to Prof. A. M. Paterson of Liverpool, formerly of Dundee.

The subject of this deformity was a man of about 40 years of age, a hawker to trade, who had died of croupous pneumonia. The pathological condition of his jaws was known to have existed unaltered for many years, but no definite history of its commencement could be obtained. There were cicatrices on the neck behind the mandibular angles and submentally, but the most striking feature was the marked recession of the chin. The right central incisors were broken, and they, as well as the upper left central incisor, were carious. The dental arches could not be separated from each other in the least, and the margin of the upper dental arch projected ·5 centimetres in front of the lower. The molars, however, were accurately approximated. On dissection it was found that the left parotid and duct were normal but small, and the gland was very firmly adherent to the periosteum of the jaw and to the fascia over a somewhat atrophied masseter muscle. On the right side the socia parotidis, Stenson's duct, and the extreme upper part of the parotid gland were normal, while the remainder of the gland was replaced by fat. The masseter muscle was absent and represented only by a small fibrous band. The buccinator was very well developed on both sides. The right temporal muscle was almost entirely replaced by fat. The macerated skull showed the whole lower jaw small and ill developed, the right side slightly more so than the left. Its body looked downwards and forwards, forming an angle of 110 degrees with the superior maxilla. The ascending rami were small and thin, and the angles of the jaw were absent, but their position was indicated by small spines of bone. The coronoid processes were small, especially the right. On the right side the neck and condyle of the jaw were continuous with the temporal bone, and no line of junction could be made out anteriorly or externally, though on the other two aspects the original line of the articulation was indicated by a serrature. On the left side the process had evidently not gone so far, for a serrature—which in itself would have been sufficient to preclude any movement—indicated the original position of the joint.

On dividing the zygoma vertically and the temporo-maxillary articulation from before backwards, and throwing the detached portion forwards, the component parts of the joint were found to be absolutely fused, the cancellous tissue of the jaw being directly continuous with that of the temporal bone. The skull, set on a plane surface, rested behind on the inferior curved lines of the occiput, and in front on the left side of the body of the jaw. In the photograph the detached portion of the right articulation is turned forwards, and the small twisted coronoid process is well shown.

The etiology of the condition here presented was most probably



The zygoma has been divided vertically, and the right temporo-maxillary articulation from before backwards, and the detached portion turned forwards. The complete fusion of the component parts of the joint can be distinctly seen.

suppurative parotitis. This had been followed or accompanied with arthritis, the articular cartilages on the right side having been absorbed, and subsequent osteitis had caused fusion of the bones. On the left side the arthritis had been rather periarticular than inter-articular. The immobility thus produced had led to degeneration of the muscles acting on these parts, this being more extreme on the right side, where the whole process had been more severe. Along with the atrophy of the soft parts the lower jaw had undergone alteration, having become smaller, and the angles had disappeared just as we find in extreme old age.

In eating, the man must have crushed his solid food with his fingers, and packed it inside his lips, the food being then drawn into the buccal cavity by suction, or forced therein by the buccinator muscles, which were specially well developed.

Operation in this case would obviously have been futile, unless, indeed, the condyle, neck, and part of the ascending ramus on the right side had been removed early in the course of the disease, in which case some movement might have been retained in the left articulation.

V.—TWO CASES OF PRIMARY INFLAMMATION OF THE HAIR FOLLICLES OF THE LIMBS.

By J. LIDDELL, M.D., Physican to the Harrogate Royal Bath Hospital.

CASE I.—J. R., aged 53, warehouseman, was admitted to the Harrogate Royal Bath Hospital on May 26, 1892, suffering from a pustular eruption of his arms and legs, which had begun in July 1891. On admission, the skin on both legs, extending from the knees to the ankles, was uniformly inflamed, being of a purplish-red colour, infiltrated, glazed, and dry. The surface was irregular, due to numerous flattened papules. At the upper part of the leg were a score or so of small pustules, each pierced by a hair, and these spread upwards on each side of the patella to the thigh. The lower two-thirds of the leg were almost entirely denuded of hair. On the lower third of the thigh there were numerous pustules, each traversed by a hair. Extending upwards from this were inflamed hair follicles without pustulation, those follicles near the groin having merely a ring of congestion. On the forearm there were several small pustules similar to those on the leg. There was also infiltration and slight congestion of the skin, with brown pigmentation. There was a scarcity of hairs, especially on the central part of the arm. Microscopic examination showed no appearance of trichophyton fungus.

On each cheek, in the situation of the whisker, there was a depressed, shining, slightly reddened cicatrix, measuring 2½ inches from above downwards by 1½ inch across. This was bordered by a scanty fringe of hair. The patient stated that he had suffered for several years, with intermission, from a pustular eruption of his cheeks, but that he had been free during the previous three years. It was surmised that he had suffered from an attack of lupoid sycosis. He denied having had syphilis. He was treated with the mineral waters and baths; also with an ointment of sulphur and ichthyol, and latterly with zinc glycerine jelly. Under this treatment the pustules and much of the infiltration disappeared.

On May 4, 1893, he was again admitted. On this occasion he had several pustules implicating the hair follicles which surrounded the cicatrices on the cheeks. There were also several crusts which on removal showed an inflamed and hard base. Examination of the legs showed the skin slightly pigmented, glazed, and hard to the touch. There were several linear cicatrices, measuring from ½ to 1 inch in length. There was an almost entire absence of hair.

CASE II.—T. B., aged 38, was admitted to the Harrogate Royal Bath Hospital on April 13, 1893, with a pustular eruption of the face and arms. The chin and lower part of the cheeks had been affected for ten years, the arms for three years. The latter were studded with pustules, each penetrated by a hair, the skin being infiltrated, red, and scaly. He was treated with sulphur baths and waters, and the arms painted with zinc glycerine jelly. At the end of three weeks the arms were well. The face, however, proved very intractable.

Remarks.—It was concluded that these patients were suffering from sycosis. This disease occurring in any other part of the body than the face is very rare. Mr Hutchison[1] records a case where it extended over the body. Case I. is interesting, not only from the rarity of the situation of the disease, but also on account of the attack having resulted in extensive destruction of the hair follicles of the leg and in cicatrisation, thus producing a condition similar to that caused by lupoid sycosis. It was seen on the second occasion upon which the patient came under observation that the disease on the face was undoubtedly lupoid sycosis.

VI.—CASE OF SUICIDE BY GUN-SHOT UNDER PECULIAR CIRCUMSTANCES.

By WALTER FREDERICK DE WATTEVILLE, M.B., Kingussie.

THE following case appears to me to present some features of interest from a medico-legal point of view.

On July 12, 1894, I was asked by the local police-sergeant to accompany him to M., where the dead body of T. F., shepherd, æt. 55, had been found in an attic bedroom. The report of a gun had been heard at 8 A.M., by the only other inmates of the house (two women), who, partly from fear and partly from uncertainty whence the sound proceeded, did not go upstairs at once. When, however, the man did not come down to breakfast at the usual time, and did not answer when called, they went up, opened the door, and found him lying in a pool of blood. They never fairly entered the room, and the constable and I were the first to go in on that day (11.15 A.M.). Neither the body nor anything in the room, therefore, had been disturbed when we entered.

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[1] *Archives of Surgery*, vol. i., page 263.

T. F. had, I am informed, been repeatedly in a lunatic asylum, and lately had declared that he was weary of life.

Examination.—On entering the attic we found the body lying on its back and obliquely across the room,—the head near the door, the feet pointing to the bed, and about a yard from the latter. A pool of coagulated blood extended from the head to the side of the bed. An old-fashioned, double-barrelled, muzzle-loading fowling-piece lay between the body and the bed; a wooden ramrod lay between the man's thighs, the thick end pointing towards the head. Large and small pieces of brain-substance were scattered all over the floor, bed, and slanting ceiling; and two or three large fragments of the cranium were also found. Mixed with the brain-substance a number of pellets of small shot were discovered. The body was still warm. There were no marks upon it. Hands both blood-stained. Left hand intensely blackened and burned on dorsal aspect, as if by burned gunpowder.

Head.—Mouth slightly open, but quite intact, both without and within the cavity. Top of the skull from the level of orbits completely shattered, and calvarium practically blown off. Base of skull in fragments, but still *in situ.* Cerebrum, cerebellum, and pons completely blown away as if scooped out. Left orbit shattered towards inner side. Nasal bone intact, but skin-wound extends half-way down the side of the nose. Eyes intact. Part of the occipital and parietal bones with pieces of scalp left still attached.

Condition in which gun was found.—The barrels pointed towards the dead body. Both were empty. The right rusty inside and out, and could not have been recently discharged. The left much blackened at the muzzle and inside, as if fired shortly before. The locks were moderately stiff. There was a great deal of blackening on the left side near the lock, and the hammer on that side was at "*full-cock.*" It was blackened as by burned powder, except in its concavity, where a small bright spot remained. On the right side there was no blackening, and the hammer was at "half-cock." There was no trace of a percussion cap on either nipple.

The condition in which the gun was found appears to me to present some points of interest. That suicide was the cause of death seems absolutely beyond doubt, more especially when it is remembered that the deceased had undergone asylum treatment, had declared shortly before his death that life was a burden to him, and some years ago had actually attempted suicide by cutting his throat.

How was the hammer of the discharged barrel at full-cock? The lock was fairly stiff, and when tested there was absolutely no springing back. To me only two alternative explanations suggest themselves:—

Either, (1), the suicide, after cocking the gun, fired it by means of a match or fuse applied to the "nipple;" *or* (2), he did so by the ordinary means of a percussion-cap, pulling the trigger with his right hand, while with the left he closely applied the muzzles to his head.

In the latter case the position of the hammer and absence of percussion-cap can only be accounted for by the charge—from the number of pellets found, an exceptionally heavy one—having partly forced its way out at the back, blown off the cap, and raised the hammer to full-cock.

We made a very careful search for any trace of a match or fuse which might have been used, but could find nothing, nor was there even a box of ordinary lucifer matches to be found in the room. On the other hand, we were equally unsuccessful in our search for a used percussion-cap. We, however, found powder-flask, shot-bag, and a box of unused percussion-caps in an open chest, quite near the surface. The shot in the bag corresponded in size with the pellets we found mixed with the brain substance and buried in the rafters.

The Procurator-fiscal accepted "suicide" as the cause of death.

If I have succeeded in presenting the facts of the case sufficiently clearly, expressions of opinion as to the probable cause of the condition in which the gun was found would be much valued by me.

VII.—SOME NOTES ON "HYSTERIA," WITH SPECIAL REFERENCE TO "HYSTERIA" IN THE MALE, AND ITS CONNEXION WITH SPECIFIC ORGANIC DISEASE OF THE NERVOUS SYSTEM.

By A. Stodart Walker, M.B.

Manifestations symptomatic of purely functional affection of the nervous system, and generally termed "hysteria," have long been recognised and studied in the male subject, and although, as Dr Mitchell Clarke tells us, Louyer Villermay, in a paper entitled "Traité des maladies nerveuses oû vapeurs et particulièrement de l'hystérie et de l'hypochondrie," published as late as 1816, denied the existence of male hysteria, yet as far back as 1618 Charles Lepois had recognised and treated of hysteria in children and in men. Since that time, amongst Continental writers, Charcot, Briquet, Pitres, Berbault, De la Tourette, Bitot, Souques, Chauffaud, Guinon, and Janet, amongst others, have investigated, classified, and published much upon the subject. An able summary of the question has been made by Dr Mitchell Clarke, whose exhaustive paper in *Brain*, Part iv., 1892, should be read by all interested in the subject.

Little or no attempt has, however, been made in this country to organize any collective investigation on this subject, and although hysteria (so-called) in women is a question of daily recognition in every large hospital in Great Britain, yet it may safely be said that the recognition of male hysteria is a matter of very rare occurrence. The statement of Charcot, that there is one case of male hysteria for every three of female hysteria to be found at the Salpêtrière Hospital, would in no case, I believe, coincide with the experience of physicians in this country. Here I take no notice whatever of the question of the comparative prevalency of hysteria in the two countries, but simply refer to the apparent discrepancy in the comparative ratio of the two sexes. I have frequently heard Charcot deny the fact that hysteria is more common in France than in England, and it appears to me that that apparent discrepancy arises probably from the fact that the physicians of Great Britain and of France lie at two extremes,—those of Great Britain being slow to own the existence of hysteria, those of France being on the look-out for it and ready to recognise it on the smallest indication. No one who has any experience of nervous disease at all will deny that the recognition of hysteria is very often extremely difficult. How is it possible in many cases of recognised organic disease to eliminate the possibility of a purely hysterical taint? More particularly in Friedreich's disease (as shown by De la Tourette, Blocq, and Huet[1]) hysterical manifestations are very seldom absent. Hence the frequent heterogeneity of the symptoms in different cases of this disease. Also such diseases as tabes dorsalis, idiopathic muscular atrophy, syringomyelia (very markedly in my experience), are in a great many cases accompanied by symptoms which on post-mortem examination can only be explained on the "hysterical" hypothesis. In fact, I am prepared to follow up a hint of M. Guinon's, raised by Dr Mitchell Clarke, and say that in a great many cases, the "hysteria"—or, rather, the nervous condition or conditions called by that name—remains latent until some organic disease of the central nervous system "not only draws attention to it," as put by Mitchell Clarke, "but stimulates it into activity." Given the existence (according to Charcot) of the primary cause of hysteria, heredity—very marked in a patient suffering from symptoms pointing to central organic mischief, and it may be laid down as a fairly safe rule that it will be difficult to deny the existence of a taint of "hysteria" in any such case, whether it be demonstrated by anæsthesia, analgesia, hyperæsthesia, feelings of formications, or other subjective or objective phenomena. In fact, one could not help being impressed by the fact, in clinically studying the cases in the hospitals of the Salpêtrière and the National Hospital, Queen Square, London, and in looking up the notes of former patients in these hospitals, that in most of the cases there were symptoms recorded which could find no explanation from the recognised morbid conditions present in these cases. Are not many of these symptoms due to a functional condition set agoing by the presence of the recognised organic disease?

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[1] *Cinq cas de mal de Friedreich Nouv Icon de la Salpêtrière*, 1888.

I have above, in using the word "hysteria," advisedly added "so-called," because of the almost insuperable difficulty of allowing oneself the possibility of either accepting or denying definitely the existence of a specific morbid affection called hysteria. Fagge calls it a real and distinct "disease," but in doing so I hardly think he would be prepared to own, that the whole of those heterogeneous symptoms (spoken loosely of by clinical observers as "hysterical," and extending on one extreme from the *grande hystérique* of Charcot, to the other extreme of the minor sensory and motor manifestations so common in the study of nervous disease) could be included in the same category. Hysteria in its narrow sense, as indicative of such clear manifestations as the *grande hystérique* just mentioned, may be as definite a disease as is acute chorea; but as applied generally as indicating certain functional affections of the nervous system, many of them bearing no relation whatever to each other, it can only be called a symptom in the same way as chorea is only a symptom of certain morbid conditions, for the most part undiagnosed during life. It seems to me that we are yet a far way off from clearly understanding what these functional neurotic conditions really mean and indicate. The heterogeneity of the types is so great that it seems hardly philosophical to doubt that many of them should never be regarded as belonging to the same category. There are theories which suit admirably certain of the more patent manifestations, but of the minor forms of what we have been accustomed to term "hysterical" manifestations, it seems almost impossible to make theories suit. It may be fairly simple to find a theoretical explanation of the before-named *grande hystérique*, but what of those minor conditions, the localized anæsthesia, analgesia, hyperæsthesia, hysterical amblyopia, and the like? The whole question has yet to be thoroughly worked out. We have to discover whether there is an entire absence of morbid change in the central nervous system or not. A "discharging" action of certain cells due to some "impression" may sound plausible enough; but can we be sure that there is not present in such "hysterical conditions" some definite change in the cells, perhaps allied to some of the changes that take place in the nervous systems of the insane. In few of the latter can we discover any definite histological change in the nervous system after death. May not an allied process have been going on in the nervous systems of those who during life demonstrated the "hysterical" taint? Again, as is well known, the hysterical symptoms have their analogues in symptoms due to recognised organic changes. Weir Mitchell has said that in hysteria "the symptoms of real disease are painted on an hysterical background." On the other hand, Buzzard has impressed upon us the opposite consideration, namely, that of "organic disease simulating hysteria." I myself, during the past twelve months, have seen four definite cases of disseminated sclerosis, each of which gave a history of having in an earlier stage of their career been diagnosed and treated as hysterics, and by neurologists of note. I saw a case three years ago in London presenting in an absolutely typical manner the symptoms of the *grand hystérique*, accompanied by amblyopia and localized patches of anæsthesia. This patient was treated as suffering from "functional" disease for two years. At the end of that time she developed all the symptoms of disseminated sclerosis, and died shortly afterwards, and on post-mortem examination marked scleroses were discovered, and judging from their histological character they appeared to be of comparatively recent development.

Does not this suggest to us that there may be always in the nervous systems of those who manifest what are called "hysterical" conditions some minute change taking place, which might ultimately lead, in *certain* patients, to definite naked-eye morbid change. That it does not in a large number of cases, history of course relates, but may it not in a minority of cases? This refers, of course, to the definite naked-eye morbid changes, and does not disturb the theory that there is some definite change in the minute cells allied to that which may take place in the insane.

But the main object of my paper is not to refer to this point particularly, but to refer to the co-existence of what is termed hysteria in certain organic diseases of the nervous system due to various causes, and especially due to specific disease. Gowers[1] has said truly,—"The effect of disease of one part is often to disturb the functions of other parts, and of such disturbance hysterical symptoms are a frequent result. There is hardly a single disease of the nervous system of which such symptoms may not be evoked in predisposed subjects. Cerebral tumours, tubercular meningitis, multiple neuritis, chorea, often cause conspicuous hysterical phenomena."[2] And this fact suggests to us another enormous difficulty, which must inevitably be thrown in the way of the clinician. Is such and such a symptom due primarily to the recognised morbid condition in such and such a disease, or is it a secondary "disturbance of function," either due to the primary morbid lesion or independent of it? May not many of the anomalous symptoms which are described from time to time by physicians as occurring in certain diseases be due to the superadding of some "disturbance of function —dependent or independent?" May this not account for so much of the discrepancy between different clinical experiences? Of course the inter-dependence and the co-existence of disease is always a difficult question, but it seems to me that the co-existence of even two possible organic conditions is often slow to be recognised by some neurologists. What the "disturbance of function" really is I am not, of course, prepared to say; we can only use the expression arbitrarily as we use the terms chorea and hysteria arbitrarily, and terms which will also remain a sign of our ignorance, —but nevertheless we all are agreed that such a condition is present in organic disease, and, as I think, in all organic disease of the nervous system. We have certainly present, to use the term of Janet[1] and Morel, "une maladie de dégénérescence." Whether this "maladie de dégénérescence" was present and latent in the body until the paralysis, contraction, etc., due to the organic disease drew attention to it, or whether it is caused by the organic disease, it would be difficult in a great many cases to say. It is noticed that in some cases the development of hysteria comes immediately on the declaration of the organic disease, and in some cases some time after, and in the case of syphilis of the nervous system, upon cases of which I now particularly wish to dwell, the hysterical manifestations may persist after the organic trouble has been apparently cured, or the hysterical symptoms may not appear till after the disappearance of the organic trouble. Syphilis as a cause of hysteria without any apparent organic changes in the nervous system has also been described; therefore, adopting a classification, we have,—

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[1] *Diseases of the Nervous System*, vol. ii. p. 988.

[2] See also Ferrier's *Localisation of Cerebral Disease*, page 2.

(1.) Hysterical symptoms due to syphilis occurring without any symptoms pointing to any gross organic disease.
(2.) Hysterical symptoms occurring synchronously with the appearance of the symptoms due to recognised organic disease, and disappearing on the subsidence of the disease.
(3.) Hysterical symptoms occurring synchronously with the appearance of the symptoms due to recognised organic disease, but persisting after the subsidence of the disease, or persisting in a modified fashion.
(4.) Hysterical symptoms persisting with the marked effects of the organic disease.
(5.) Hysterical symptoms appearing late in the progress of the disease, and (*a*) either persisting, or (*b*) disappearing, or (*c*) being modified with the subsidence of the organic disease.
(6.) Hysterical symptoms appearing after the apparent disappearance of the organic disease.

With regard to the persistence of hysterical manifestations after the apparent cure of the disease, it would be hard to give the pathology in any particular case. In one case it may be due to some distinct morbid change in the central nervous system, while in another case it may be due to a habit or an auto-suggestion. I commenced this paper by special reference to male hysteria, and I did this advisedly (although most of my remarks would apply to "hysteria" as manifested in both sexes), because it has been recognised—more particularly by Charcot and Pitres—that the male is more liable to hysteria produced by poisons than the female, and of the cases which I have of hysteria in the syphilitic subject, only one is in a female subject. The cause of this is hard to explain.[1] As to hysteria, of course the prevalence in the female sex is notorious. This is marked, if we accept Charcot's one to three; but Briquet's one to twenty-five would, I think, approach nearer to the experience of British physicians.

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[1] *Archives de Neurologie*, vol. xxvi., No. 77.

Let us now examine, under the headings I have given above, some typical cases. It may interest those who have paid attention to the etiology and development of syphilis that in all my cases, with the exception of the first, the secondary symptoms of the disease were almost *nil*. This coincides with the accepted view, that the absence of well-marked "secondaries" is generally accompanied by well-marked "tertiaries," and these often affecting the nervous system.

(1.) "Hysterical" symptoms (in the male) *following* syphilis, without any symptoms pointing to any gross organic disease of the nervous system.

The word "following" must be noted, for I do not propose to note here at all the hysterical manifestations which may occur in the secondary stage of syphilis. These cases are fairly numerous. The following case occurred after the tertiary stage of the disease:—

CASE I.—J. M., æt. 26,[2] a fisherman, contracted syphilis at the age of 20; had a mild primary stage, with very marked secondary symptoms; sore throat and falling-out of the hair. He had a marked neurotic history, his father having died of general paralysis of the insane, and his mother had in her younger days been subject to fits, which were of an epileptiform nature. Patient himself had up to the time of his contraction of the specific disease been a particularly strong man, and although naturally exposed to much hardship in the pursuit of his calling, he had never suffered from any organic disease, nor could any facts be obtained pointing to any remote manifestations up to the time when I saw him. He was carefully treated during all the stages of his disease. He took mercury and iodide of potassium fairly regularly for two years, and at the end of that time all traces of the disease seem to have vanished. Two years after this, however, he became subject to peculiar hysterical attacks. If talking, he would suddenly stop speaking and utter a strange cry; lights flashed before his eyes, and the "globus hysterious" rose in his throat. He then fell on the floor, and kicked and struggled about in a violent fashion. There was no unconsciousness, no foaming at the mouth, no biting of the tongue, no change in the pupils, no oscillations or abnormal movement of the eyeball, and no involuntary passing of urine or fæces. Patient never hurt himself seriously. Patient had as many as ten of these fits in the day, but never any during the night. From being a particularly cheerful, bright man, he became morose and suspicious.

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[1] The absence of any attempt at statistics in any of the books on syphilis upon which I could lay my hand (including Mr Hutchison's excellent work), prevent me from knowing definitely the ratio of prevalence of the disease in the two sexes.

[2] An important year in the history of the development of hysteria; a time of life graphically described by Janet as the "puberté morale."

I happened to be staying in the district where the patient lived, and the medical man who had been the family doctor having just left the district, I saw the case. He had been treated with bromide of potassium taken alternately with iodide of potassium, with no seeming improvement, followed by a tonic treatment of strychnine and iron. These methods having been tried for a considerable period, hypnotic suggestion occurred to me; but I was loth to use it, having just returned from working at the Salpêtrière in Paris, and remembering that attempts at hypnoses are often some of the principal causes of hysteria. However, believing with Guinon that "hypnosis should never be resorted to except in cases where the neurosis is present in so severe a form that there is no risk of making the patient worse," and remembering the success of the case which I published in the first volume of the *Edinburgh Hospital Reports*, I consented to try, fortunately with the best results. Patient readily responded to the suggestion, and since coming out of the hypnotic state he has never had another fit, and has returned to his work apparently in a remarkably satisfactory state of health.

With regard to this case, important in the rarity of the type, I took every precaution to assure myself of the non-existence of other nervous symptoms. I could discover no other cause of the fits, no history of shock, or trace of peripheral irritation. Of course, it would be impossible to state *absolutely* that these fits had reference to the syphilitic poison; but the time when the fits came on—about five years after the initial lesion—and the absence of any other possible cause, made me believe that the syphilis and the fits stood in the close relation of cause and effect. Were I asked to give a prognosis in such a case as this, I would not be inclined to give a very favourable one, unless a careful therapeusis was kept agoing. The man's hereditary history, and the presence of such a personal hysterical taint, induced by the syphilis or not, will probably point to more neurotic developments in the future.

(2.) "Hysterical" symptoms occurring synchronously with the appearance of the symptoms due to recognised organic disease, and disappearing after the subsidence of the disease.

CASE II.—Mr G. A., æt. 30, in 1887 contracted a primary sore, followed by very slight secondary eruption. There was no sore throat, no falling-out of the hair, or other secondary manifestations. He put himself upon mercury and iodide of potassium for three months, at the end of which time the symptoms of the disease seem to have disappeared, and he stopped the medicine. Everything went well with him physically till spring 1892, when he began to complain of very severe pain at the back of the head, tenderness of the scalp over the occipital region, and a slight giddiness. These symptoms were followed in a few days by gradual loss of power in the right arm and leg and slightly in the left arm. His medical man at the time immediately put him upon large doses of mercury and iodide. From the notes taken at this time I find that not only was there marked paralysis of the right arm and leg and slightly of the left arm, double optic neuritis, and vomiting, but there were, unequally scattered over the left leg, circular patches of anæsthesia and analgesia. There were also well-marked localized patches of hyperæsthesia over the pectoral muscle on the left side, and a fortnight after the paralytic symptoms appeared patient had a fit, which is described in the notes as epileptiform (marked globus hystericus, etc.). When I saw the patient in October 1892 he had made a remarkable recovery. The double optic neuritis had completely disappeared; power was nearly complete and equal on both sides; there had been no more fits. What remained was a slight increase of the knee-jerk on the right side, and a slight amount of giddiness on standing with the eyes closed; and over the left buttock there was a single patch of anæsthesia, and over the left pectoral muscle a small patch of hyperæsthesia. I saw him again in March 1893, just about to leave for South Africa. He was then apparently in perfect health,—still, however, taking small doses of iodide and having the mercury inunction. The giddiness had disappeared, the knee-jerks were normal, and the anæsthesia and hyperæsthesia had simultaneously disappeared. I omitted to state that there was a markedly neurotic history to be obtained: not only had his mother been subject to hysterical attacks when young, but he himself had a history of chorea lasting for two years.

(3.) "Hysterical" symptoms occurring synchronously with the appearance of the symptoms due to recognised organic disease, but persisting after the subsidence of the active disease, or persisting in a modified form.

CASE III.—J. M., æt. 27, a Frenchman resident in Paris, a waiter, contracted a primary sore eight years ago. According to his own account he had been perfectly well up to the time of this infection. There was a history of epilepsy in the family, and patient himself said that he suffered much with "convulsions" in his infancy. There was a very mild secondary stage, but about four and a half years after the primary infection he was suddenly taken with fits of a one-sided nature—right-sided, with very marked occipital headache. He was treated with the ordinary antisyphilitic remedies, combined with the bromides. At the same time as the fits came on he had well-marked patches of anæsthesia in the left leg and arm, which seemed to have varied at each clinical examination. He made an excellent recovery; there was no paralysis, the headaches disappeared, and when I saw him in April 1893 he was in good health, with the exception of the persistence of the patches of anæsthesia and hyperæsthesia above mentioned. I made a careful examination of the patient. He was evidently of a marked neurotic type. He said he had had no fits for twelve months and no headache. On examination I could make out no marked changes in the superficial or deep reflexes, no optic neuritis, no change in any of the special senses, but over the front of the left thigh and over the deltoid of the left side there were marked patches of anæsthesia. On a second examination the position of these patches had varied a little, and had extended. Since I left Paris patient has left the hotel where he was formerly employed, and I have not been able to trace his whereabouts, to discover if any further change or complication has taken place.

(4.) "Hysterical" symptoms persisting with the marked effects of the organic disease.

CASE IV.—J. M., æt. 48, a labourer, was admitted into Ward 22 of the Royal Infirmary in July 1892, complaining of paralysis of the right side of the face and slightly of right arm, accompanied by severe pain. Patient had a primary sore five years ago, with mild secondary symptoms, and was treated with mercury and iodide for two months. He was in fairly good health until July 8th, when on awakening in the morning patient found he could not lift his arm, and that his arm and face were very painful; he was not unconscious.

On examination the following was made out:—*In the Nervous System: Sensory*—(1), Loss of sensation in thumb and two fingers (at tips) on both sides; (2), entire loss of sensation in right arm, right side of face, right side of tongue, right conjunctiva, and on the inner side of both feet. *Motor*—Slight loss of power in the right arm.

Eyes.—Sight nearly *nil* in the right eye. Paralysis of internal rectus, superior oblique and inferior oblique of right eye, marked dilatation of right pupil, with all reflexes lost.

Face completely paralyzed on right side; face drawn to healthy side.

Smell and taste lost on right side. Skin reflexes and deep reflexes all absent on right side.

Patient was put on antisyphilitic remedies for three months, with little or no result. The anæsthetic area in the feet and fingers varied, however, in a remarkable fashion,—some days being completely absent, some days well marked and extensive, and other days small and well localized.

Patient left the hospital improved only in the sense that the pain he complained of had disappeared. Otherwise his condition was much the same as when he came in.

This case suggests to us the consideration whether we are dealing here with a type of malingerer rather than with a type of hysteric; but I think it would be almost impossible in such a case to state definitely what was the accompanying condition. "Patches of anæsthesia" are not, generally, favourites of the malingerer. Such conditions are often accompanied by thorough clinical testing, in the way of pins and hot irons and severe electrical applications. Besides, where can we draw the line of demarcation between hysteria and malingering? and, now that the word neurasthenia has been added to our vocabulary, between hysteria, neurasthenia, and malingering?

(5.) Hysterical symptoms appearing late in the progress of the disease, and either (*a*) persisting, (*b*) being modified, or (*c*) disappearing with the subsidence of the symptoms due to the organic disease.

I have no full notes of any cases under this category, but I saw a case at the Salpêtrière of a young man who was being treated for facial paralysis, diagnosed as due to syphilis, who commenced to have hysterical seizures three months after the appearance of the facial paralysis, and which were still going on after the facial paralysis was nearly cured. Hypnosis failed in this case.

I saw another case, where a patient who was being treated for hemiplegia, the result of a syphilitic gumma, develop late in the progress of the disease a contraction of the field of vision, which passed off in a few days. The optic neuritis from which he had been suffering had nearly disappeared.

(6.) Hysterical symptoms appearing after the apparent disappearance of the organic disease.

Under this heading I would include the case of a man, A. S., æt. 36, a miner, who was admitted into Ward 22 of the Royal Infirmary, and the details of whose case I published in the first volume of the *Hospital Reports*. At the time of the publication I said: "There was no *very definite* specific history to be obtained," but from what I noticed at the time, and from what I have heard since, I think there can be no doubt left as to the specific history. This patient complained of remarkable jerking movements of the whole body, so powerful at times as to nearly throw him out of bed. There were present also certain peculiar cerebral and general sensory disturbances. This patient's symptoms completely passed away after one hypnosis.[1] (See vol. i. *Hospital Reports*, page 420.)

In considering these several cases, it would, of course, be difficult to say where the symptoms due to organic disease ended and the "functional" symptoms began. As I have said before, we have yet to learn the real significance of these "functional" conditions. Certainly I would be prepared to believe that there exists in all these cases the "tendency" (to use a familiar expression in biological science) to nervous disease, an extreme susceptibility to a functional disturbance, whether caused by the ordinary or extraordinary environment of the individual, or caused by disease in the central nervous system or its opposed structures. Purely on theory, and empirically from recorded cases, we might attempt a classification on these lines:—

(1.) Symptoms, though not necessary to, nor directly symptomatic of, organic disease, yet dependent on its existence.

(2.) Symptoms existing independent of any "organic" disease as diagnosed by our present methods, due to some (*a*) physical, (*b*) chemical, (*c*) or other change.

(3.) Symptoms due to a condition of habit or auto-suggestion, due to a previous organic condition or other environment.

To this classification it is easy to raise many objections; but I put it forward as purely arbitrary, as all such classifications in the present state of our knowledge must be.

In conclusion, I must again repeat the impression that the coexistence of hysteria and syphilis is a marked and definite one. Whether the particular recognition of the existence of these "hysterical" conditions in specific disease is accompanied by the fact that we are careless of recognising the same taint in all other organic nervous conditions, I am not prepared to say. Probably it is so; and I should be glad if this paper made us follow the example of the French physicians, and keep a sharper look-out for symptoms of an "hysterical" nature. Of course, in the outcome it only comes to be a question of purely clinical interest.[2]

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[1] I am indebted to Sir T. Grainger Stewart for leave to publish this and Case No. IV.

[2] I make no apology for the slender way in which I have handled this subject. The paper does not profess to be a dissertation or a thesis. It is, as its title implies, only "Some Notes on Hysteria."

VIII.—HYPODERMIC MEDICATION IN CERTAIN DISEASES OF THE TROPIC ZONE.

By CHARLES FORBES, M.D., C.M., D.P.H. Cantab.; late Surgeon, Gold Mines, Wassa, W. Africa, etc.

MERELY by way of preface introducing a few brief notes on the kinds of syringe most serviceable and the method of keeping them in an efficient state—the form of drugs most useful and reliable in tropical practice—I now also take the opportunity of pointing out that one of the most valuable items of a medical man's equipment for tropical practice is a case such as "the Congo medicine chest," which is perfectly air-tight. This should be filled with general drugs, a very useful list of which is given by the late Surgeon Parke in *A Guide to Health in Africa*, pp. 62, 63. This has room also for the most important item of all, a case of permanent hypodermic tabloids, with a silver syringe with a cap in a silver case, and gold-plated needle. This case should be made of leather, sewn, and not glued together, as the wooden cases usually are. All nickel-plated cases should be avoided, as they and their contents are rapidly affected by the warm damp air. The only case that I have seen or made use of—and they are many—is one which Dr Currie gives an illustration of (Fig. 17) in his translation of Drs Bourneville and Briccon's *Manual of Hypodermic Medication*, page 21. This case, as well as the tabloids I advise and use myself, were made by Messrs Burroughs, Wellcome, & Co., London. A somewhat larger syringe is sometimes necessary for injecting ether; those manufactured by Hicks, or that used by Dr Dujardin-Beaumetz, answer every purpose. As to drugs to be selected preferably, my experience, which has been a long one in the tropics, teaches me that drugs compressed in a powdered form are most permanent and potent, also least likely to deteriorate, which can hardly be said of organic solutions or of discs made of gelatine menstruum,—gelatine being simply a hotbed for most bacteria. The reasons why I use tabloids in preference to tablets, discs, or organic solutions will naturally be asked. They are as follows:—(1), They are convenient, portable, reliable as to dose and strength of alkaloid; (2), they are evidently made of pure alkaloids in powder, compressed with the aid of a menstruum which is aseptic and non-effervescent, such as sulphate of soda, etc. (*The Lancet*, February 17th, 1894); (3), they are readily soluble in a few drops of water; (4), solutions thus prepared and used on the spot are open to none of the objections which can be veritably made against the organic hypodermic solutions, viz., that fungi or moulds (would these, when forming, impair the alkaloid contained ?), crystalline and other deposits are found after a short time; (5), again, the excipient is alkaline, which renders even such a drug as sclerotinic acid almost neutral in a solution prepared with tabloids, thus fulfilling the great axiom in the practice of subcutaneous injection, namely, "that all solutions used should be neutral, or nearly so," as an acid solution causes inflammatory trouble and pain when injected, whereas neutral solutions do not. *Note.*—Under (4) and (5) it will be seen that the commonest sources of danger in this practice of medication can be avoided by using tabloids. Certain salts—such as, for example, mercurials—affect even gold needles, "so that the needles and syringe should be carefully washed out with an antiseptic solution after using." Neuman advises, in addition, that one should blow through the needles by means of an air-ball as an additional precaution. Further, care should be taken to inspect the instrument before use in order to see that it is clean and in working order, carefully anointing the needle with a little carbolized oil or eucalyptia. Now, as to site selected for injection,—the back near the shoulders, the buttocks, the most muscular part of the arm, etc. The following parts are to be strictly avoided,—eyelids, nose, ears, neck, scrotum, axilla, etc., and where inflammation is taking place. As to accidents liable to be met with, an interesting account is given of them by Coulombe, *Essai sur les accidents locaux des injections hypodermiques*, Paris, 1872.

Having thus indicated the (in my own clinical experience) best instruments and materials to be used in this method of therapeutic treatment—which gains redoubled importance in tropical climates, where, in the first place, drugs given by the mouth do not act rapidly enough; in the second place, we meet with many cases where we are quite precluded from giving medicine by the mouth owing to continuous and persistent vomiting, as in cholera and various malarial fevers, etc.—I will at once plunge into my subject. The scope of this paper will only allow me to mention the drugs and their dose, naming, at the same time, some of the conditions in which they can be employed with advantage.

In order to abort an attack of fever by inducing profuse diaphoresis, one may employ pilocarpine nitrate, gr. $\frac{1}{8}$ to $\frac{1}{10}$, immediately on taking a chill giving rise to that commonest of all diseases in the tropics, malaria or its fevers. This proceeding is highly commended by Parke (*loc. cit. supra*). To arrest a bilious condition in the initial stage of remittent or pernicious intermittent fever, apomorphin. hydrochlor., gr. $\frac{1}{10}$, may be taken either hypodermically or sublingually; this drug produces a rapid and painless emesis in a few minutes with perfect safety. To cut short an attack of ordinary Indian or African remittent when just at its acme, morphine sulphate, gr. $\frac{1}{2}$ to gr. $1\frac{1}{2}$; this usually produces tranquil sleep, and in the morning there is a marked fall of temperature (*Indian Medical Record*, March 1st, 1894). I regret to find that the profession as a general rule, even in India, do not fully appreciate the "gift of God to man" as a curative and prophylactic remedy in malaria. The same drug has a powerful effect in the cramps incident to Asiatic cholera. When there is a marked remission during remittent fever, a few doses of quinine hydrobromate, gr. $\frac{1}{2}$, may be given without any fear of tetanus, and with good effect. To reduce temperature when vomiting is a prominent symptom, and this usually happens in these fevers, aconitin, gr. $\frac{1}{250}$; this always acts as a powerful analgesic and antipyretic. When cardiac failure threatens through continuous hyperpyrexia, or in comatose states so often noted in malignant remittents and yellow fevers, stimulants may be necessary; caffein sodio-salicyl., gr. $\frac{1}{2}$, or digitalin, gr. $\frac{1}{100}$, or nitro-glycerin, gr. $\frac{1}{250}$, may be thus used in succession. To combat hæmatemesis and other sanguineous discharges in these same fevers or in dysentery (acute), ergotinin citrat., gr. $\frac{1}{100}$, or acid sclerotinic, gr. $\frac{1}{2}$, may be employed successfully. In neuralgiæ and other painful sequelæ of malaria, doses of aconitin or morphine sulphate as above, or local injection of cocain hydrochlorate, gr. $\frac{1}{6}$, substantially benefit the patient. Here I may advert to the treatment of snake-bite, to which many deaths may be attributed annually, especially in India. Dr Mueller (*Indian Medical Record, loc. cit.*) has very shrewdly revived the practice of injecting strychnine in these cases on the stated grounds that the result of this serpent poison is to produce in man paresis of the higher motor centres, therefore the only treatment likely to be of service is repeated doses of strychnine nitrate, gr. $\frac{1}{15}$, given rapidly, to rouse these centres, even at the point of death. This remedy, Dr Mueller avers, will save a patient when bitten by the Australian cobra (Hoplocephalus curtus) and other venomous snakes of this continent, and to the best of my knowledge it has even saved more than one patient when bitten by the dreaded cobra de capello. Testimony as to its value when patients have been bitten by deadly Indian vipers—Echis carinata and Bungarus cœruleus—has been given by Dr Banerjie of Pachbadra (*Lancet*, May 23, 1892, p. 1183), and he has given further notes lately in the Indian medical journals,—Banerjie mentioning several cases completely cured. *Note.*—This same treatment is useful in all cases as a nervine stimulant if patient appears to be moribund. In cases of collapse from cholera Dr C. Macdowall (*Lancet*, vol. ii., 1883, p. 658) advises intra-peritoneal injections of warm water; however, I think intravenous injections of a neutral saline solution, warm, is more efficient still. In cases of narcotic poisoning, such as by Bikh or Nepàl aconite, injections of strychnine nitrate, gr. $\frac{1}{15}$, may be repeatedly used if necessary. In chronic interstitial nephritis following malarial fever, pilocarpin nitrate, gr. $\frac{1}{10}$. In algide stage of cholera, sulphuric ether has been used by Mader and Oser. The following mixture—Quinine sulph., gr. vi., and ether sulph. ♏xv., was used by Burdel in pernicious intermittents. In *yaws* and *syphilis* a solution made of one tabloid—hydrarg. sozoiodol, gr. $\frac{1}{4}$—injected, is a capital therapeutic agent in these twin complaints. In coma from sunstroke, strychnine nitrate, gr. $\frac{1}{15}$, may be injected to cause a reaction, as well as galvanism and an ice-cap, if possible.

In all cases of delirium, hyoscine hydrobromate, gr. $\frac{1}{100}$, meets the case fully without any unpleasant after-effects.

An apology is of course due for the brevity of these remarks, but I cordially hope that they may be deemed useful hints as to what form of drug is best, by medical men who show an interest in the progress made latterly in tropical medicine.

IX.—NOTE ON THE IMPORTANCE OF THE NUTRIENT ARTERY AND VEIN, FOR THE SHAFT OF THE TIBIA, IN REGARD TO ITS VITALITY; as Illustrated by the Effects of an apparently Trivial Injury to that Bone in a Man of 66 Years of Age.

By R. W. Irvine, M.B., C.M., Pitlochry.

On the 21st day of Oct. 1892 I was sent for to attend R. D., who had received a hurt to his shin, which bled profusely, and caused alarm to his relatives. The hurt was either caused by a kick from a restive horse, or by the shin grazing the step of the trap in which he was sitting, in hurriedly dismounting. On examining the shin bone I saw signs of very considerable hæmorrhage, especially considerable in relation to the appearance of the wound from which it proceeded. It was apparently little more than an abrasion of the front of the tibia near its centre. The skin wound was not larger than a shilling, but the tissue was nicked clean off the bone over that area; and the periosteum was, to a smaller extent, taken with it, leaving a small denuded area of the tibia, but no suspicion of even a crack in the shaft of the bone. The hæmorrhage had ceased, and did not recur when I had to remove the clots, to ascertain what the injury really was. I have seen and felt apparently as bad an injury to the tibia in a Rugby football match in the old hacking days, and no bad result accrue,—only "an honourable scar."

The obvious management was adopted, viz., rest; microbe-killing dressings, as dry as possible; suitable nutriment; and attention to the essential functions of assimilation and excretion. To all appearance the wound looked as if it would be healed in a week or ten days.

Instead of that, after taking about a week to make up its mind, it decided to go to the bad. The soft overlying tissues got dusky over an ever slowly increasing area; increasingly profuse pus formation developed in the wound, gradually undermining the tissues and ripping off the periosteum. If this pus contained bacteria, smell never revealed it. I did not put it under the microscope. Making a counter-opening here or there, to prevent bagging, rigid attention to protection against germs from without, rest and quiet, ample and carefully divided nutriment at moderately frequent intervals, and no niggard use of stimulants, were all one could do, though I gave him some chlorate of potash and iron, the only effect of which was, I believe, to upset his digestion and astringe his bowels. The process of carionecrosis was clearly going on and spreading at an increasing rate, and could not be stayed. It was necessary to decide on a step. I applied an Esmarch, freely opened up the tissues in front up and down, and found about 2½ inches of the shaft of the tibia bathed in pus, broken up, honeycombed, rotten, pieces coming way the size of a hazel nut. To improve matters, the anterior tibial artery had already given or then gave way, as I discovered on removing the Esmarch. The patient had now been about two months going this way. He had an average temperature of about 100°·5 F., was getting hectic and wasting, with anorexia and the listless air of the indifference of an exhausted mind and body. The "vis medicatrix" was evidently ebbing, and there was clearly no time to lose, so there and then I amputated through the knee-joint by a short anterior flap, retaining the patella and a long posterior flap, retaining as much as possible of the posterior tibial and its muscular branches, for nutrition of the flap.

After a few days' doubt the mending process begun; tongue cleaned, appetite returned, flesh came back, so did energy, and hope and desire for recovery; and without a hitch, except one small counter-opening where a little pus had bagged in the posterior flap, the wound was firmly and solidly healed inside of four weeks. He now is 14 lbs. heavier than before the amputation. He is quite well. The wound is a well-healed cicatrix long ago, and he has long ceased to be a patient,—only a recovered one of some interest. He is a wiry, spare, short man, with no known inherited diathesis. The points in the case I consider of special interest are:—

1. The danger of an even apparently trivial injury to a bone, in a man at his age, where the nutrition of the shaft is cut off; the tendency to necrotic development, and one's helplessness to avert it; and in such a case the usefulness of prompt decision and action before exhaustion, owing to reluctance to operate, goes too far.

2. The question of using the saw, in reference to *shock*. If I remember aright, we used to be taught that in an amputation at the knee, the condyles of the femur should be sawn off. I believe in this case the patient would have died had I done this. The right thing seemed to be to use no saw, but separate the part to be removed entirely through soft tissues, only using the knife. The result justified the conclusion arrived at, and has given the patient, I believe, a better stump than the use of the saw would have done. Moreover, it has left him in life, and health, and activity.

I think there is enough of interest in this case to make it worth recording.

X.—YELLOW FEVER.

By Charles Finlay, M.D. (of Havana).

(*Continued from page* 45.)

Bacteriological Investigations.—The bacteriology of yellow fever is generally considered to have given only negative results, in so far that the etiological significance of the different micro-organisms which have been pointed out as the supposed specific germ is not accepted by the most competent judges. From another point of view, however, valuable information has been gained corroborative of the views expounded by me before the Academy of Sciences of Havana in February 1888, viz., that the melano-albuminuric form is but the result of a secondary infection developed in the stomach or intestine by the ordinary pathogenic bacteria of the alimentary tract, when the protective investment of the mucous membrane has been previously deteriorated through the operation of the yellow fever poison upon the system at large. The well-known American bacteriologist, Dr G. Sternberg, in his official report concerning his extensive investigations in Havana during the summers of 1888 and 1889, expresses himself in the following terms regarding the B. coli commune (his bacillus *a*):—"This is the bacillus which I have obtained most frequently in my cultures from blood and tissues, and which has been present most constantly and abundantly in cultures from material obtained post-mortem from the stomach and intestine and from the alvine discharges of the sick" (*Report on the Etiology and Prevention of Yellow Fever*, p. 181).

Now, if it be remembered that in almost all the cases investigated by Dr Sternberg the stomach or intestine contained black vomit, and belonged therefore to the melano-albuminuric form, the fact that the *B. coli commune* was so frequently found in the blood and tissues very few hours after death must be considered as a direct confirmation of the secondary infection, which I had previously suggested. Subsequent discoveries in Europe have now brought to light the *rôle* of the *B. coli commune* as a frequent source of secondary infections, and also its pathogenic influence upon the liver and kidneys. The fatal influence of such a complication upon a patient already reduced by the primary yellow fever infection may therefore be readily assumed. Other bacilli have, however, been obtained by Dr Sternberg and others from the tissues of yellow fever subjects; it is possible, therefore, that in certain cases the secondary infection may proceed from other gastro-intestinal microbes besides the *B. coli commune.*

Pathogenesis.—While acknowledging that several missing links would have to be supplied before a scientific explanation could be given of the phenomena of yellow fever, some plausible deductions may be formed in view of the facts set forth in the clinical history, morbid anatomy, and bacteriology of the disease.

The most prominent features in the "non-albuminuric" and the "plain albuminuric" forms point—(*a*) to some pathological process going on in the walls of the small vessels and capillaries (by which these are rendered more permeable and brittle) as the cause of certain important symptoms; (*b*), to a stimulation of the vaso-dilator centres as the *raison d'être* of the congestion observed during the period of invasion and also of the subsequent relaxed condition of the bloodvessels when the mass of blood has been reduced in consequence of filtration of the blood serum through the altered walls of the capillaries. The filtration of the blood serum and the diminished resistance of the vascular endothelium would account for the concentration of the blood, for the yellow colour of the tissues, for the presence of albumen in the urine (even when no actual nephritis has developed), and for the hæmorrhagic tendency.

A hæmorrhagic tendency, constituted by a weakened condition of the walls of the capillaries, would require the intervention of some other factor before passive hæmorrhages could be produced,—a factor capable of bringing about a local hyperæmia that should put the capillary walls on the stretch. The menstrual *molimen* in women, a fit of coughing or sneezing, a muscular effort, might in particular cases account for the bleeding from the uterus or nose, and for effusion of blood under the conjunctivæ or in the inter-muscular spaces; but a more persistent and prevalent influence must be found for the oozing of blood at the gums, and upon the surface of the tongue, for the repeated epistaxis and for the hæmorrhages from the stomach and intestine, all of which are of such frequent occurrence that they are almost pathognomonic of the disease. Be it remarked that in all these situations the blood comes from mucous membranes which are constantly in contact with secretions in which bacteria always abound both in health and in sickness; hence it cannot be a matter of surprise that some of the pathogenic species should form colonies at particular spots where the protective epithelium has been deteriorated. The local infection thus produced would be attended with areas of hyperæmia in which the walls of the distended capillaries might not be in a condition to withstand the blood-pressure. From the appearances seen during life upon the gums and upon the tongue, and from the distribution of the arborescent patches of hyperæmia upon the mucous membrane of the stomach and intestine observed after death in the melano-albuminuric cases, the plausibility of the above assumption seems fully borne out, and it is probable that the same is true where the Schneiderian membrane is concerned. According to these views, the most frequent manifestations of passive hæmorrhage in yellow fever would imply corresponding secondary infections, but the latter would probably vary in kind, according to the particular bacteria which prevail in the different parts of the body. In the mouth and gums some micro-organism, such as the bacillus recently discovered by Babes as the promoter of scurvy, might be more likely to determine local rather than general symptoms, whereas in the stomach and intestine the *B. coli commune* would probably be the source of a secondary infection which, as has been ascertained in other pathological conditions, would be apt to extend its sphere of action to the liver, kidneys, or lungs, and to become a frequent cause of death. The high importance which clinical observation attaches to the slightest appearance of gastro-intestinal hæmorrhages or black vomit would thus be explained, since those symptoms would be understood to signify that a dangerous secondary infection had already been established, which must greatly increase the dangers of the case.

Treatment of Yellow Fever.—According to my views, the chief object of a physician undertaking a case of yellow fever, even at its very onset, should be to guard against the chances of an ultimate development of gastro-intestinal hæmorrhages or black vomit. For this purpose his main reliance must be in an efficient disinfection of the alimentary canal, an operation which requires time, and must therefore be commenced as early as possible.

It is quite true that, when the primary infection has been severe, the patient may die without the occurrence of those symptoms; but experience teaches that the chances of such an event are infinitely less than those of death through the gastro-intestinal infection. Moreover, the disease having once declared itself, we have no reliable means of controlling the intensity of the primary infection. At the moment of the invasion, the incubation period has already elapsed, and the specific germs must be supposed to have attained their maturity, and to be poisoning the patient through their toxines, against which we have no direct means of action (unless, indeed, the blister serum from immune subjects, as was suggested last year by me, should prove efficacious in that way). The only resource against this primary infection has, therefore, hitherto consisted in combating the symptoms and placing the patient in the best position to weather the storm. With regard to the gastro-intestinal hæmorrhages, on the other hand, our position is quite different; for, unless the first stage of the disease be very brief, or attended with so much gastric irritation that medicines cannot be retained, or, again, so insidious that the patient only becomes aware of his illness when that period has already gone by, the alimentary canal can be so treated that, by the time when the secondary infection might be likely to take place, the bacteria contained in the stomach and intestine will have been so far destroyed or attenuated that an infection may not easily be produced through them.

There was a time when our most successful plan of treatment apparently consisted in clearing out the bowels at the onset of the attack, keeping them open by frequent enemata throughout the disease, and allowing no food of any kind before the fourth or fifth day,—only boiled water or diuretic decoctions being given to allay the thirst. Particular symptoms were treated *pro re natâ*. By the light of present ideas, such a plan might be judged quite rational, so long as efficient non-irritant intestinal disinfectants were unknown; but now, with the introduction of the new disinfectants (in particular naphthol, or, better still, benzo-naphthol), and of such diuretics as theobromine and caffeine, a decided advance appears to have been made in the treatment of yellow fever.

The method which I have adopted is as follows:—

As soon as possible after the patient is taken sick, if incipient yellow fever be only suspected, an efficient purge (preferably 45 grammes of castor-oil beaten up with lime juice) is administered, and, if necessary, repeated, and its operation hastened by enemata. Soon after the operation of the purge has commenced, benzo-naphthol, in half gramme doses, is given every two hours, and, if the diagnosis is confirmed, continued until the fourth or fifth day, as regularly as may be consistent with the night's rest and with the tolerance of the stomach. The dose of benzo-naphthol may require to be reduced before that time, if the urine becomes dark and smoky, a sign which, I observe, is more apt to occur in favourable cases than in the fatal ones; but if the albuminuria is well marked, I do not generally suspend its employment entirely before the fifth or sixth day. As a common drink the patient is given a 2 per 1000 solution of sodic bicarbonate in boiled water, of which some two litres may be consumed in the twenty-four hours. Enemata of boiled water are at the same time prescribed to be administered every six hours by means of the irrigation bag hung at a moderate height. Nausea or vomiting should be allayed by small draughts of effervescent mixtures, cold mint infusion, pieces of ice kept in the mouth, or counter-irritation to the epigastrium. Some means should be taken to form an approximate estimate of the quantity of urine that is passed between the visits, and to have the last portion that has been discharged kept apart in order to test it for albumen. When less than five or six ounces are passed in the space of six hours, diuretine (in 1 gramme or ½ gramme doses) should be given, or else, if the heart action be weak, caffeine may be ordered instead. For the insomnia, 1 or 2 grammes of chloral hydrate may be added to the enema at night. For the nervous excitement valerianate of ammonia is often useful. When the fever runs high, sponging with aromatic vinegar is recommended. Should uræmic symptoms appear, the enemata must be more frequently administered, and also the theobromine or caffeine. When delirium declares itself, and the head feels hot to the touch, ice applications or cold compresses to the head, and the tepid bath, are sometimes beneficial. If the hæmorrhages from the nose, mouth, or female genitals are excessive, some styptic applications may be employed, and when the black vomit or blood is discharged in large quantities, fluid extract of ergot may be injected under the skin,—sometimes with very good results,—provided the respiration remains free. Blood-letting, which was formerly much and rather indiscriminately employed, has now been entirely discarded; yet in the robust and plethoric, when the congestive symptoms are intense, leeches applied behind the ears, on the first or second day, sometimes afford very marked relief.

No food of any kind is allowed during the first four or five days. This is a rule very generally observed in Cuba, and from which no bad results have ever been cited; whereas premature attempts to feed the patient are believed to hasten the development of melanic symptoms. The patients themselves do not generally express any desire for food before the fifth day, or, if they do, will not relish it when granted.

The patient should be kept as quiet as possible, both in mind and body, in a well-ventilated room,—all hygienic precautions being taken both for the sake of the patient and for others.

The employment of intestinal disinfectants have given very satisfactory results, not only in my hands, but also in those of several colleagues who prescribe them pretty much as I do, though many differ from me in considering the gastro-intestinal tract as the probable seat of the primary yellow fever infection. It is difficult, however, to judge upon statistical data the efficacy of any plan of treatment, inasmuch as, in different sets of cases, the danger varies greatly. The majority, in some groups, may be cases which would be cured under any form of treatment, while in others there may be an unusual number of cases of the worst description which seem from the first doomed to die in spite of all efforts and under any treatment that can be devised.

Mode of Transmission.—This is a subject which has tried the sagacity of all the observers who have attempted to unravel the etiology of yellow fever. Even now the statement is occasionally met with, that the disease may be contracted either by ingesting contaminated food or drink, or by inhaling disease germs that may be floating in the air. Yet a close scrutiny of the order in which the cases occur, and of the peculiarities that are observed in the propagation of the disease, gives no support whatsoever to those assertions. Some of the objections have already been pointed out (see "*Nature of the Disease*"), but there is another important one that will now be mentioned. It is a well-established fact that beyond certain limits of height above the level of the sea the disease cannot be acquired either through fomites imported from infected localities, or by direct contact and frequentation of yellow fever patients who may happen to be in those high levels (having received the infection elsewhere). Low temperatures produce the same results as high levels, though each, we are told, independently of the others. Now, to my mind, this would be quite incomprehensible if the disease could possibly be acquired either by inhalation, ingestion, or contact. Some thirteen years ago I was led by these considerations to think that the only mode of transmission at all compatible with the ascertained facts must be by "inoculation." A simple reasoning further induced me to suspect that such inoculations of the disease germs might be produced by some stinging insect peculiar to yellow fever countries, and which, for some unknown reason, should alone possess the requisite conditions for retaining those germs in their full potency and vitality. Some species of gnat might well fulfil some of the requisites; for although the genus *culex* is distributed pretty much over the whole world, the different species have distinct climatic requirements. A close investigation into the habits and the biological conditions of the species of gnat commonly met with in Havana and in other places along the Atlantic coast of tropical America soon convinced me that those which come out during the daytime, at dawn, and in the evening,—the "culex mosquito" in particular,—unite the most essential conditions to fulfil the *rôle* of a special inoculating agent which should be the habitual propagator of yellow fever. How closely the vital conditions of this mosquito agree with those which are known to favour or hinder the propagation of that disease may be seen in the following paradigm:—

YELLOW FEVER.	CULEX MOSQUITO.
Temperatures at which yellow fever has been observed to cease in New Orleans and in Rio Janeiro = 15° to 18° C.	Temperatures at which the mosquito is completely benumbed by artificial cooling of the air = 15° to 19° C.
Temperatures which have proved insufficient to prevent a subsequent reappearance of the disease without a new importation = 0° C.	Lowest temperature which the mosquito will bear, in a state of apparent death, and after which it may yet revive = 0° C.
Temperatures which are considered to completely extinguish the infection of yellow fever = severe frosts.	Artificial cold after which the mosquito cannot revive = from 1° to 4° C. below zero.
Mean temperatures which admit of a free propagation of yellow fever in Havana = 26° to 30° C.	Mean temperatures in which mosquitoes are most numerous in Havana = 25° to 30° C.
Coincidence of unprecedented abundance of mosquitoes with severe yellow fever epidemics,—in Philadelphia, 1797, and in the Southern States of North America, 1853.—(*Laroche*, ii.)	Coincidence of a scarcity of mosquitoes in Havana with an unusual diminution of yellow fever during the summer of 1886, the reverse coincidence being observed during the autumn of the same year.
Artificial heat which has proved efficacious in definitely arresting the transmissibility of yellow fever,—several stoves employed to heat the hold of the "Regalia."—(*Laroche*, ii. p. 440.)	Temperatures at which the mosquito falls into a condition of apparent death, but may still revive = 39° to 41° C. Temperatures after which it cannot revive = 41° to 49° C.
Altitudes at which epidemics of yellow fever have been exceptionally observed: Newcastle (Jamaica), 4200 feet; and Madrid (1870), 2000 feet.	Artificial rarefaction of air in which the mosquito is for a while deprived of its power of flying or stinging, but sometimes after a while recovers = equivalent to 1000-6000 feet.

The only proof that seemed wanting to make the demonstration complete was the reproduction of the disease through the mosquito, and this I have been able to do on one occasion at least, under circumstances which seemed to exclude the principal sources of error (see *American Journal of Medical Sciences*, October 1886 and September 1891; also *Archives de Medécine Navale*, Paris, 1883).

My theory of the transmission of yellow fever will now be explained. The female mosquito having introduced its lance into the skin of a yellow fever patient through one of its pores (excretory ducts of the sebaceous or sudoriparous glands), pierces one of the blood capillaries and fills itself with blood. In so doing the transverse ridges and the terminal teeth that exist on the outside of the compound lance of the insect are supposed to pick up some of the disease-germs contained either in the blood itself, in the walls of the capillaries, in the connective tissue, or in the excretory duct of the cutaneous glands through which it has penetrated. After this operation the lance is withdrawn within its sheath, and the mosquito, weighted by the blood, seeks some dark corner where it may hide and digest unmolested the blood that it has sucked. Forty-eight hours in summer, and three to five days in winter, are required for this digestion, during which time the insect persistently refuses to sting again, though it is always ready to suck, with the point of its proboscis, at any particles of sugar that may be within its reach. The female mosquito has generally been fecundated before it begins to sting, and will therefore seek some pool of stagnant water or neglected bucket in the open air, where it may lay its eggs. The day mosquito never lays its eggs in the manner described in books, but scatters them, besmeared with a glutinous substance, over the surface of the water or upon the sides of the tank or vessel. Its colour is black or steel; there are five white rings on its hind legs, and others on the middle and front ones; its wings are so short that they do not cover the anal segment of its body. In all these particulars it differs from the night mosquito, which is larger in size, of a uniform yellowish-brown colour, lays its eggs like the European *Culex pipiens*, and has longer wings. I have only experimented with the diurnal and crepuscular species, for the nocturnal can seldom be made to sting more than once.

The C. mosquito may be kept alive during thirty-five days in a very small space, and with a very scanty supply of air, provided it is allowed to fill itself with blood every two or three days, or if only some dry sugar and a supply of fresh water are placed within its reach.

In my inoculation experiments the interval between the application of the contaminated mosquito to a susceptible person and the appearance of the first symptoms of a mild attack of the disease (when such a one did occur) has varied between five and twenty-five days, the latter term being the one that I have fixed upon, beyond which any morbid symptoms would be considered as independent of the inoculation. In the majority of cases no pathogenic effects were produced—only one or two recently contaminated mosquitoes having been used in each case—but a protective influence appears to have been thereby manifested, as will be shown in the next section, where artificial immunity will be considered.

(*To be continued.*)

Part Second.

REVIEWS.

A Dictionary of Medicine, including General Pathology, General Therapeutics, Hygiene, and the Diseases of Women and Children. By Various Writers. Edited by RICHARD QUAIN, Bart., M.D. Lond., LL.D. Ed., F.R.S., etc., assisted by FREDERICK THOMAS ROBERTS, M.D. Lond., B.Sc., F.R.C.P., etc., and J. MITCHELL BRUCE, M.A. Abdn., M.D. Lond., F.R.C.P., etc. New Edition. Two Volumes. London: Longmans, Green, & Co.: 1894.

THE review of a book such as this must proceed on very general terms. As each of the volumes consists of twelve hundred pages, filled with notes and descriptions of the most varied character, anything like a detailed criticism of the individual papers is out of the question. Originally published in 1882, since which date over 33,000 copies have been issued, the necessity for a new edition was felt several years ago. The labour involved in this undertaking may be readily conceived when the increase in the number of pages, 1834 to 2518, is considered.

Quain's Dictionary of Medicine has long been regarded, not so much as a dictionary, but, owing to the eminence of the contributors, as an authoritative text-book, in which monographs, most of them necessarily short, could be found on almost every subject dealt with in medical sciences. Owing, however, to the length of time which such a large work requires in its writing and editing, it can never, even when just published, be considered to be properly abreast of the times,—times which just now advance with such extraordinary rapidity,—but must be taken as an index of the position of medicine three or four years before publication. For instance, though the theories of immunity and phagocytosis are discussed, the method of treating various diseases by means of organic extracts is barely mentioned in the edition under review, save for a very short note inserted at the end of an article on myxœdema.

Owing to many of the original contributors having died, the articles previously written by them have been rewritten by others. Many new articles also have been added. Among these we notice a long one devoted to a description of micro-organisms by Prof.

Greenfield and his senior demonstrator Dr Robert Muir, which merits our warm commendation. Unaccountably, however, these authors have forgotten to say anything about the relation of micro-organisms to the juices of the intestinal canal, or to the question of auto-intoxication, in their otherwise well-written article. In the different articles on the various forms of anæmia too little note is taken of the supposition that it may be caused by intestinal absorption, and there is no mention of Bunge's hypothesis with regard to its treatment with hydrochloric acid. Why the writer of these articles goes out of his way to talk of "Hypalbuminosis" and "Aglobulism," or of "the process of sanguification," when shorter words, more akin to the pure Anglo-Saxon, would be more simple and more easily understood, is beyond us. Another new article which we are glad to see is one on Life Assurance, by Dr James E. Pollock, in which the principles to guide the medical examiner are tersely and clearly put forward. A very useful article will be found in Dr Hermann Weber's Mineral Waters. Of the rest, we can only say that the numerous articles are well written, and likely to prove of the greatest service to the busy practitioner anxious for guidance in a difficult case.

The books are well printed, well bound, and issued at a very moderate figure.

Hygiene and Diseases of Warm Climates. Edited by ANDREW DAVIDSON, F.R.C.P. Ed. With 7 Plates and 97 Figures in text. Edinburgh and London: Young J. Pentland: 1893.

THE editor of this large volume has obtained the co-operation of many distinguished contributors, and he has produced a work of undoubted merit, and one which, it is not going too far to say, is the best in any language on the hygiene and diseases of warm climates. We should have preferred the term "hot climates" or "tropical climates," but that is a matter of detail.

The teacher, the student, and the practitioner in tropical regions will doubtless welcome this book, although it is not perfect; for it must be admitted, as the editor states in his preface, that although the classical treatises of Annesley, Moorhead, Martin, and Chevers remain of permanent value, they do not accurately represent the science of the present day. Before referring to any of the articles, we may say that the book fails in overlapping: some space is wasted in ancient history, in one or two of the articles there are too many illustrative cases, but the chief defect of the book is undoubtedly in the sections on treatment. The publisher has also made a mistake in the size of the book. It is admirable were it intended for a library, but for a book which ought to be the companion of every man practising in the tropics, it is far too heavy. Indeed, a surgeon-captain to whom we recommended the book recently, said he could not take it, as he would have to charter an extra elephant for its conveyance to his distant station in India. We hope that the size of the next edition may receive attention from both editor and publisher. We calculate that at least 150 pages might be excised with advantage, and the space thus gained might be utilized by adding to the subjects treated of, and the diseases of children in the tropics might well receive more than a passing notice. The treatment of disease, too, could be largely extended with advantage. In a book of this character one expects full details of various methods of treatment, even although only one may take the fancy of the writer. We make these general remarks in no unfriendly spirit; the book is such a necessity that every effort should be made to make it still more perfect.

Dr E. A. Birch writes concisely and well on the influence of warm climates on the constitution, referring to the death-rate, the changes which take place in the physiological functions, and on pathological processes. The section on the Theory of Acclimatization we should have been glad to have seen somewhat amplified.

The Hygiene of the Tropics is ably dealt with by Dr Lane Notter, and Tropical Naval Hygiene finds an admirable exponent in Fleet-Surgeon R. W. Coppinger; his article is both practical and very valuable, and his notes on Tropical Ship Diseases are extremely useful. The Editor himself writes upon Malarial Diseases, Dengue, and is associated with Dr D. M. Davidson in the chapter on Dysentery. His chapter on Malaria could hardly be better, as far as it goes; but we note the absence of various complications and rare manifestations of the disease, which, we think, should find a place in such a work as this. We are glad to see that he does not see sufficient reason to accept the doctrine of a hybrid germ in typo-malarial fever; but we wish he had condemned the term altogether, as it leads to confusion and uncertainty in treatment, at any rate amongst young practitioners. More might well have been written on the vexed subject of Bilious Hæmoglobinuric Fever. With regard to prophylactic treatment, Dr Davidson's advice is admirable; but we think the doses of quinine advised are unnecessarily large, and no caution is given as to the effects of the prolonged use of the drug. We are also in doubt as to how long quinine in prophylactic doses is advisable—"*over* a period of two or three weeks" is mentioned, but is that period to be months or years? Nothing is said about employing a mosquito net—an omission of some importance surely; and the value of arsenic is, we think, undervalued—at least, if experience on the Congo is trustworthy.

In the treatment of malaria, quinine seems to be the one drug relied upon, and we are disappointed at not finding mention made of other drugs which are often of value—for quinine may undoubtedly fail. We are surprised, too, that no attention is paid to Laveran's instructions as to the administration of quinine; a definite scheme such as he has laid down would be of great use to the junior practitioner at any rate.

The Editor's chapter on Dengue is also very good, though rather brief, especially the section on treatment, which occupies barely sixteen lines. A word of caution should have been given with regard to antipyrin and salicylin, which are advised; both drugs may in some cases prove injurious.

But space will not allow us to go into detail concerning each chapter, nor is it necessary; for the names of Fayrer, Macnamara, Sousino, and Sternberg, authors of various chapters, are a guarantee sufficient for most.

In the chapter on Cholera, ancient history should be cut out, and more space devoted to Haffkine's inoculations and the treatment adopted in Russia and Hamburg,—the brief references given are not enough for a work like this, nor would the books referred to be available.

In the chapter on Yellow Fever by Dr Sternberg, which is excellent, inoculation as a prophylactic measure is condemned, and Finlay's work in Havana is not mentioned. Even if the author does not believe in the methods adopted by others, it would be well, we think, to briefly give the results they claim to have obtained. By so doing, workers in the tropics would see, at any rate, what lines of investigation have failed—if they have failed—and would gain valuable hints which would prove of undoubted benefit.

In the article on Tropical Typhoid we note that no mention is made of the "urine test," and the Johns Hopkins Reports might have been mentioned as showing the value of the microscope in clearing up doubtful cases, when the question has to be answered, Is this malaria, or typhoid, or what?

Dr Sousino's chapter on Entozoa is splendid. Nothing could be better; but we note a curious point showing "how authorities differ" (p. 895). Writing on the treatment of anchylostomiasis, he says, writing on the administration of thymol—"It is necessary, therefore, to administer it in such a way as to avoid absorption, and for this purpose alcohols of any kind should be interdicted during its administration and action."

Dr F. M. Sandwith, who has had very great experience in treating this disease, writes: "Warned by the death of at least one of my patients immediately after digesting the thymol, I have always administered to feeble men 25 grammes of brandy with each 2 grammes of thymol, with the happiest results." . . . "Thymol, if given without brandy, is probably very insoluble in the stomach and intestines."

Dr Sousino wishes to avoid absorption, Dr Sandwith to favour it. Which is right?

Dr Manson's chapters are good, very good; he gives a perfect monograph on filaria disease.

We must, however, end. We cordially recommend the book. The illustrations are as good as might be expected from such a well-known publisher. We may, however, ask how is it that it is needful to go abroad for a plate illustrating the malarial parasite? Could not one of British production be found? The very diagrammatic one given (after Golgi) gives no possible idea of the appearances of the parasite. If no British observer can supply a plate, try Mannaberg or Laveran.

A Collection of the Published Writings of Sir William Gull, M.D. Medical Papers. Edited by THEODORE DYKE ACLAND, M.D.

Clinical Lectures on Medicine and Surgery. German Authors. Third Series. London: New Sydenham Society: 1894.

THESE papers of Sir William Gull's extend over a period of forty years. The papers are clinical, and are of great historic interest and intrinsic value, many of them being illustrated by excellent plates and woodcuts.

The clinical lectures by German authors is a most readable book. Three of the lectures are by Von Ziemssen, one by Billroth, one by Erb, and other well-known teachers contribute on subjects in which they are acknowledged authorities.

The papers are well translated, and contain the most recent work on the subjects of which they treat.

Through Blind Eyes. By MAURICE DE LA SIZERANNE. Translated from the French by F. P. LEWIS, M.D. New York: G. P. Putnam's Sons: 1893.

The Blind as seen through Blind Eyes is an interesting little book of 154 pages, in which we obtain some information, more or less valuable, as to the lives and habits of our less fortunate brethren. It is divided into four parts, of which the first deals with the characteristics of the blind—physical, intellectual, and moral. M. de la Sizeranne is of opinion that the sense of sight has not that preponderating value over the other senses which is generally assigned to it. "Both hearing and touch carry more accurate knowledge than vision. Sight, indeed, often deceives us, and touch, *the closer sight,* is constantly required to control and correct the wrong impressions conveyed by the eye. Hearing puts a man in direct contact with his fellows, and consequently with the moral and intellectual world." But then, to be sure, M. de la Sizeranne is blind! Indeed, it is not a little pathetic, and apt to raise a sad smile, to observe the comfortable satisfaction with which the author regards his own sightless condition, and the compassion which he seems to think it necessary to extend to those who are burdened with that inconvenient encumbrance of sight.

Part II. is concerned with the life and history of Valentine Haüy (1745–1822), the "Apostle of Education for the Blind," with his labours, his discouragements and his successes, and forms a very interesting interlude. It tells of his first "call" to the work of instructing the blind on the occasion of his seeing with sorrow, at St Ovid's Fair, a grotesque and rather cruel exhibition of their misfortunes and helplessness, and describes his many difficulties in France and Russia (where the officials stolidly informed him, in answer to his enquiries as to what measures were taken to assist the blind, "There are no blind in Russia"); it narrates how he at last lighted upon the idea of the raised type, his troubles during the Revolution, and his peaceful death in 1822.

Part III. deals with schools for the blind, and forms really the most important section. The information is, however, too general to be very valuable, though, as giving in a cursory way a knowledge of the methods of tuition, it is useful enough. It would have been better had some of the disquisitions been omitted, and the space assigned to more categorical information.

In Part IV. the author writes concerning the blind in society—past, present, and future. Here he points out what must be recognised as the real difficulty, viz.,—It is simple enough to educate and train the blind, but the trouble is to find work for them to do in after life. In Japan, he says that for centuries it has been the case that nearly all the blind are masseurs, and all masseurs are blind,—so much so that the two terms are used almost synonymously. Could not some of our blind find a sphere in similar work?

A Text-book of the Diseases of Women. By HENRY J. GARRIGUES, A.M., M.D., Professor of Obstetrics in the New York Post-Graduate Medical School and Hospital, etc. Philadelphia: W. B. Saunders: 1894.

PROF. GARRIGUES has written a useful work on Gynecology, which, whilst primarily intended for undergraduates and such as have attended or would like to have attended post-graduate lectures (to quote the preface), will also doubtless be widely read by specialists also. Over a hundred pages are devoted to the development and anatomy of the female genitals; and the author tells us that he has treated this subject so discursively because it has been "to a great extent worked up by the gynecologists themselves, and is not yet described satisfactorily in the text-books of anatomy, but only in larger works of an encyclopædic character, or in articles in journals to which many have not access." Nevertheless we fancy it is slightly out of place in what claims to be a purely practical work. There is a short chapter on Physiology, dealing with puberty, menstruation, copulation, fecundation, and the change of life; and the parts dealing with "etiology in general," "examination in general," and "treatment in general," are eminently well written. The rest of the book, some four hundred pages, is devoted to the description of the special diseases. The information given has been brought up to the standard of modern theory and practice, and is in most particulars thoroughly reliable. There is, perhaps, rather too much talk about the use of various pessaries in the treatment of displacements, and too high a value is, we believe, placed upon electricity as a therapeutic means. At the same time, it is quite permissible for an author to stamp his work to some extent with his own particular beliefs. There are many good illustrations; the book is well printed; and a capital index makes consultation easy.

Essentials of Minor Surgery: Bandaging and Venereal Diseases. By EDWARD MARTIN. 2nd Edition. Philadelphia: W. B. Saunders: 1893.

THIS book is specially prepared for students of medicine, and arranged in the form of questions and answers. The advantage gained by this arrangement is not very obvious.

Such works as this are seldom of great value beyond the sphere of the school in which they are produced, and this probably holds true in the present instance. Bandaging is sufficiently well dealt with, but the section on fractures is very inadequate, and one can see no good reason why diseases of the genito-urinary organs should be treated of in a publication of this nature, though many of the remarks on this subject are quite deserving of attention.

The author's views on chloroform administration and its dangers do not wholly commend themselves to one accustomed systematically to its use; thus, he speaks of the risk of sudden death from respiratory arrest *without premonitory symptoms*, advises that sufficient admixture of air be allowed with the *first few* inhalations, and wholly discountenances its use in timid and violently hysterical patients, and in those with feeble heart's action.

The work does not compare very favourably with other well-known books on the same subjects, although in most respects quite sound in the views expressed, and a safe guide to those students in whose hands it may be placed.

The Rectum and Anus; their Diseases and Treatment. By CHARLES BALL, M.Ch., F.R.C.S.I., etc., etc. Second Edition. London: Cassell & Co: 1894.

THIS volume forms one of the valuable series of clinical manuals for practitioners and students; the first edition appeared in 1887, and its reception fully warrants the author and publishers in issuing the present volume.

The work of revision has been thorough, and chapters on many subjects are largely rewritten, especially those dealing with the operative treatment of various conditions. Much of interest will be found in the remarks on fissure, on the relation of pulmonary phthisis to fistula, and on the operative treatment of prolapse, hæmorrhoids, and rectal cancer.

The chapter on the examination of the rectum is extremely good; here, and indeed throughout the work, the views of the author and the description of the various steps of examination and of operative technique are presented with great lucidity, and with more attention to minor points of detail than one often finds in such manuals.

It is difficult to select among the many useful hints which one may pick up from the book; but one may mention the caution given as to the danger of the use of bougies in certain conditions, as to the utility of the erect position during digital examination of the rectum, as to the use of purgative medicine in piles, and as to the different causes of strangulation of hæmorrhoids.

Mr Ball attacks with boldness many controversial matters,—the possibility of rectal stricture resulting from long-continued spasm, the advisability of operating upon piles during the stage of inflammation, and the relative advantage of the various operative procedures in rectal cancer. On these and many other subjects he justifies himself in the position he takes up.

Mr Ball's book is one among many, but the student can find no safer guide, and the practitioner will find the information contained in its pages peculiarly accessible and available in his work.

The volume is carefully and sufficiently illustrated.

Stricture of the Urethra. By J. FRANK LYDSTON, M.D. Chicago: The W. Keener Company: 1893.

THIS volume comprises essentially a series of class-room lectures, and is specially designed for the general practitioner and student. While undoubtedly such readers would gain much knowledge useful to them in this work, and may safely take the volume as a practical and most reliable guide, yet we imagine that few, unless especially interested in urethral surgery, will feel disposed to peruse so relatively lengthy a monograph upon a single surgical topic, however important.

For such readers the chapters on the Anatomy and Instrumentation of the Urethra are especially appropriate, also those on the Causes of Stricture (Chap. V.), on Urethral Fever (Chap. X.), and on the Complications of Stricture (Chap. XIII.).

Dr Lydston's book should certainly win a place for itself among the writings on stricture; it is a most careful and thorough piece of work, full of useful detail, and evidently directly based upon a wide clinical experience. His views on the usual site of strictures as being in the penile urethra are interesting, but at variance with those commonly held; he thinks they occur in the proportion of about 10 in the penile to 1 in the deep urethra. Dr Lydston regards the former as being permanently curable, and is an enthusiastic supporter of Dr Otis's operation of "dilating urethrotomy;" he regards it as so complete a treatment that the after-passage of bougies is needless. This and the other operations and their indications are sufficiently and clearly described, and the various methods of examining the urethra are likewise very fully discussed (Chapters II. and VII.).

Dr Lydston's remarks on the pathological localization of stricture (Chap. V.) are well worthy of attention, in which he indicates factors which determine the predilection of stricture for different portions of the canal. Referring to the relation of gonorrhœa, he says—contrary to the usual opinion—that the occurrence of stricture is in direct relation to the *severity* of the primary urethritis. Here one is inclined to join issue with him, as one would judge that a neglected and long-continuing urethritis would induce stricture more certainly than a properly treated urethritis, however severe, and the history of most cases in experience justifies this view. One point in which we think Dr Lydston's advice distinctly to be wrong is with respect to the use of the aspirator in retention, an operation which, he says, may be done, if necessary, "a number of times;" that a single operation is most essential in many cases is incontrovertible, and possibly a repetition may be advisable in some circumstances; but should the surgeon fail to pass a catheter after one or two applications of the aspirator, we believe that perineal cystotomy is a safer and more radical treatment, and should be certainly perferred to repeated use of the aspirator.

Dr Lydston does not, we think, do justice to the perineal operations for stricture, though fully recognising their value; they are dismissed in eight pages, while nearly thrice that number are devoted to the internal operation. A chapter is given upon electrolysis in stricture.

In the main, the teaching found in this volume may be accepted as thoroughly sound, and such as will certainly repay perusal.

There are seven plates and eighty-five woodcuts, and a number of cases illustrative of Otis's operation are reported. The printing of the work is exceptionally good.

Trephining in its Ancient and Modern Aspects. By JOHN FLETCHER HOME, M.D., etc. London: John Bale & Son.

AS presented in this volume, the ancient aspect of the trephine is much the more attractive, and the representations of the fearful and wonderful instruments of Petit and Scultetus interest one more than the author's remarks on the present state of the subject.

The subject-matter is ill arranged, and the absence of an index increases one's perplexity. Thus, the subject of paralysis of the insane is interjected in the midst of the pages dealing with trephining in epilepsy (Chap. III.), and general remarks on the significance of papillary changes and localization of cerebral functions meet one in the last chapter, which is devoted to "remarks on trephining." This confusedness of plan largely destroys any possible usefulness of the book, and the reader's difficulties are further increased by occasional peculiarities of diction and sentence construction, such as meet one in the second paragraph of Chap. IV.

> "The difficulty of comparing cases of injury to the head, as told to us by Guthrie and Hannen in the time of Waterloo, and the present, is increased by the alterations in the gun carried by the soldier, from an ordinary musket to a breech-loading arm with its graduated aim and rifled barrel, whilst the alterations in the arrangements for carrying the wounded off the field to the base hospital, along with the great improvement in the nursing, and the attempt to dress wounds on the field antiseptically; but this comparison may be helped when we bear in mind the treatment this class of wound received from irritating compounds applied in ignorance, along with the absence of cleanliness and bad sanitary arrangements."

Worse than all is it to find that after these difficulties have been met, the perusal of the book adds little or nothing to previously and more readily acquired knowledge.

The Arena. August 1894. Vol. X., No. 3. Boston, Mass.: The Arena Publishing Company.

WE have received a copy of this magazine. Up to this date we did not know of its existence. Now we can vouch for the admirable selection of a name. The arena is a place of sand, and this magazine is a place of sand where faddists who love to ride hobbyhorses of the most astounding powers of prance can fall off easily and in suitable company. Such a collection of cranks and enthusiasts one rarely finds writing between the same covers. Some of us occasionally enjoy the perusal of the *Morningside Mirror*. So far as we know, all the contributors to *The Arena* are free to wander where they will. Hypnotism in surgery; prenatal influence; the divided skirt, and male and female culture generally; Occultism in Thibet: a remarkable psychic experience—all treated in articles in this one number—may be specially suited to the medical reader. Probably the most amusing article for the general reader is one by the editor, on Fostering the Savage in the Young; and the way it is done is by cadet corps and drill-sergeants in the schools: "The child who is drilled in the manual of arms, has constantly before him the hour when he may draw the trigger which means death to a fellow-man; he comes to love the sound of the drum-beat, and learns to long for the chance to shoulder the murderous gun!!" In Americanese, How's that for high?

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIII.—MEETING XI.

Wednesday, 4th July 1894.—Dr Clouston, *President, in the Chair.*

I. Election of Member.

Douglas Watson, M.B., 8 Brougham Place, was elected an Ordinary Member of the Society.

II. Exhibition of Patients.

1. *Mr A. G. Miller* showed a case of recovery after operation for SEPTIC SINUS PHLEBITIS OF THE LATERAL SINUS, the result of middle-ear disease. In operating, Mr Miller had gouged the mastoid cells, widened the external meatus, opened the mastoid antrum and the lateral sinus groove for an inch and a half, incised the sinus, and ligatured the internal jugular. A tubular stilette was used for draining the middle ear and preventing stenosis after the operation.

2. *Dr W. Allan Jamieson* exhibited—(*a.*) A CASE OF LICHEN PILARIS, *var.* SPINULOSUS.—The patient was a healthy boy of six, whose family history presented nothing remarkable. He was sent to Dr Jamieson by Dr John Thomson. Three months since, the eruption now visible appeared on the right side of the nape of the neck, then on the left, gradually extending till the patches coalesced. Some weeks later it showed itself on the front of each thigh, and has crept round to the corresponding flank. There are also two small patches under each knee, on the upper part of the shin. The eruption does not cause pain or itch. It consists of closely set, acuminate papules, greyish in tint themselves, though from a slight concurrent congestion the patch, viewed at a little distance, has a pinkish hue. Most of the papules have a minute epidermic spine projecting from their apex, hence the term spinulosus. To the hand passed over them they feel harsh and bristly. Though all the affected parts are similar, the characters are most marked on the neck. The cause of this rare condition has not, so far, been discovered. It is an affection of the hair system, is met with chiefly, but not exclusively, in childhood. The symmetry of its distribution would rather point to a trophic disturbance than to a parasitic origin. The treatment consists in washing with the resorcin salicylic soap, but cure has been obtained in other instances by the application of Vlemingkx's solution.

(*b.*) A CASE OF LUPUS VULGARIS ERYTHEMATOIDES OF LELOIR.—In this form of lupus vulgaris the localisation and the characters of lupus erythematosus are pretty closely simulated. In the case of the middle-aged woman shown, the disease extends symmetrically over both cheeks, including the nose, imparting at a little distance the bat's-wing aspect; but on closer examination the brownish-red nodules of lupus can be clearly seen embedded in the general redness. It is fair to state that the appearances have undergone considerable modification by treatment. When admitted into the Royal Infirmary there was much crusting and pretty deep ulceration; this has all disappeared, but there are yet many isolated, and some grouped nodules. Thyroid tabloids were twice prescribed, but even three daily caused in a short time so much increase in the pulse, palpitation, and uneasiness, that their further employment had to be discontinued. She has been more than three months under treatment, and now returns home for a time, improved but not cured.

3. *Mr Cathcart* showed two successful cases of REMOVAL OF THE VERMIFORM APPENDIX FOR ACUTE APPENDICITIS.

4. *Prof. Chiene* showed a case of UNILATERAL ENLARGEMENT OF THE BONES OF THE FACE AND ANTERIOR CRANIUM in a male patient, 24 years of age, healthy and able-bodied, who was sent to the Hospital by Dr Welsh of Kinghorn. Dr Welsh believes that the condition was a sequela of severe enteric fever, when he was nine years old. The man himself thinks it began with a blow when he was nine years old, and he points to the superior maxillary bone over the antrum as the place where he first noticed the enlargement. The superior maxillary, the nasal, malar, frontal, and anterior part of the parietal bones are affected. The condition is one of general enlargement or hypertrophy.

Measurements (in inches).

	Right (normal side).	Left (abnormal side).
Circumference, ...	10½	11½
Glabella to external angular process, ...	2¼	3
External angular process to upper border of meatus auditorius, ...	2½	3
From upper border of meatus auditorius to external occipital protuberance, . .	5	6
From external occipital protuberance to tip of mastoid process, ...	4½	5
Ramus of jaw, posterior border,	3	3¼
From angle of jaw to symphysis menti, ...	4¼	5
From angle of jaw to glabella, .	5½	6¾

	Right (normal side).	Left (abnormal side).
From external angular process to mid point (between glabella and occipital protuberance), .	7	7½
From upper border of auditory meatus to mid point, . .	6½	6½

The temporal artery is distinctly larger and more tortuous than on the opposite side. There is no difference in the skin.

Mr Jonathan Hutchinson possesses a skull evidently of one who suffered from this condition, and spoke of it when he delivered the Address to the Royal Medical Society in 1890 (*Hutchinson's Archives*, vol. i. p. 312). Mr Alexis Thomson read a paper before this Society in 1890 on a skull given to him by his brother (*Edin. Med. Journal*, January 1891). He has kindly brought the photographs here to-night. I am not aware of a similar described case in the adult in life. The skull presented to the Anatomical Museum by Mr Alexis Thomson, and the skull in Mr Jonathan Hutchinson's possession, are examples of the hypertrophy. It appears to be a localised hypertrophy of the bones supplied by the fifth nerve. Looking to the supposed relations of the pituitary body to acromegaly, one is inclined to theorise; and if the condition can be looked upon as a localised acromegaly, to ask that if in similar cases an opportunity is afforded, careful attention be directed to the pituitary body.

The patient was sent to hospital because he has recently suffered from pains over the antrum of Highmore. These were completely relieved by the administration of 10-grain doses of potass. iodid. He is a strong, healthy man, and has now gone back to work. A cast of his head has been taken, and is now in the Surgical Museum in the University of Edinburgh. Much has yet to be done in settling the nervous supply of the different cranial bones. In this connexion Prof. Chiene drew attention to a paper by Dr Murchison describing the skull of a patient of Dr Bickersteth's (*Path. Soc., London, Transactions*, vol. xvii., 1886). The condition in that case was bilateral and more tuberous than the case now recorded. The great point of interest was the complete absence of any hypertrophy in the occipital bone.

5. *Dr Byrom Bramwell* showed—(1), two cases of LUPUS under treatment with THYROID EXTRACT; (2), three cases of PSEUDO-HYPERTROPHIC PARALYSIS.

III. Exhibition of Specimens.

1. *Dr Burn Murdoch* showed a CAST OF THE SKULL OF KING ROBERT THE BRUCE, found at Canaan Lodge, the residence of the late Dr Gregory, and presented through him to the Anatomical Museum of the Edinburgh University by Mrs Leith, Dr Gregory's grand-neice.

2. *Mr Joseph Bell* showed for *Dr Benjamin Bell*, Kirkwall, TWO

CARTRIDGES REMOVED FROM A BOY.—On July 6th, 1893, Dr Bell was called to J. C., a little boy, aged eight years. Found he had sustained a gunshot wound, which had blown away the whole of the alveolar portion of the right superior maxillary bone posterior to the canine tooth, also making a large triangular gaping wound in the centre of the cheek. In the soft tissues of the cheek was found and removed a fired-off blank cartridge. The cornea and sclerotic coats of the right eye, along with the skin of the face, were impregnated with portions of gunpowder.

Statement of the accident by his brother, H. C., aged fourteen, who shot him:—H. C. stated that he picked up on the volunteer ground a blank unfired cartridge. When he returned home, he took down an old breech-loading gun, and inserted the blank cartridge. With the muzzle of the gun a yard from the half-open door he pulled the trigger. Just as he did so his younger brother ran in at the door, and received the charge in his face. The cartridge was so small that it passed along and out of the barrel when the gun was fired off.

In the course of a fortnight the flesh wound was healed, but for weeks the state of the eyes gave cause for great anxiety. Portions of the conjunctiva had to be snipped away to remove the gunpowder, the source of great irritation; while the almost total inability to swallow reduced his strength to almost vanishing point. In November the tissues in the neighbourhood of the antrum of Highmore became inflamed, causing considerable suffering. One evening the boy had a fit of choking, and during a paroxysm brought into his mouth the brass end of a second cartridge, of the existence of which up to this date we had heard nothing. On questioning his brother who shot him, it turned out that prior to introducing the blank cartridge in the breech he had put into the breech the brass end of a cartridge (from which he had removed the paper containing the powder), which had slipped into the barrel, and he thought fallen out to the ground. The brass end had evidently remained in the barrel, and when the blank cartridge was fired off, had been projected like a bullet, and lodged in the boy's right antrum of Highmore, where it remained for four months. From the patient's symptoms it is probable that the brass end of cartridge found its way from the antrum into the posterior nares, and from thence to the pharynx, bringing on the feeling of choking. From the short distance at which the muzzle of the gun was from the patient when it was fired off, and from the line of the track of the wound, on first consideration it seemed marvellous how the brass cartridge end which lodged in the antrum did not penetrate the posterior wall of the antrum, and then the base of the skull, through the sphenoid bone, at the origin of the pterygoidens externus muscle.

The possible explanation of the boy's marvellous escape seems to be:—

(*a.*) The cartridge end and the blank cartridge were so small that they did not nearly fill the circumference of the barrel—thus a great deal of their force was lost.

(*b.*) The powder in a blank cartridge is less in quantity and inferior in quality to a loaded one.

Somewhat problematical *c* and *d* as causes.

(*c.*) The walls of the antrum in children are much thicker than in adults.

(*d.*) Possibly the air in the antrum may have acted like a cushion in retarding the progress of the cartridge.

With the exception of a slight nebula of the cornea, which is clearing up, and a limitation of the movements of the jaw-bone, the boy is in perfect health, and in personal appearance little altered. It is possible, however, when the rest of the molar teeth in the lower jaw come in he will have considerable trouble. Dr Bell wished to acknowledge the kind assistance rendered by Dr Lavack, oculist, Aberdeen, who was at Kirkwall at the time of the accident, and of Dr Sinclair of Kirkwall.

IV. Original Communications.

1. *Dr A. Lockhart Gillespie* read his paper ON THE ACTION OF ACIDS AND ALKALIES, AND OF SOME OTHER DRUGS, ON THE SECRETIONS OF THE BODY.

Dr Allan Jamieson congratulated Dr Gillespie on his admirable and scientific paper. He mentioned a case where a gentleman who had consulted him for pruritus ani, but who had also suffered long from chronic gastric catarrh, told him that he could not take acids as medicines in any form, but could and did take chloride of ammonium with great advantage. The action of chloride of ammonium, as of the chlorides generally, was believed to be that of rendering the gastric mucus more liquid; it might thus free the peptic glands. At the same time chloride of ammonium is a nervine stimulant, as seen by its action in relieving migraine and trigeminal neuralgia. Had Dr Gillespie made any observations on the effect of sulphurous acid in cases of cancer of the pylorus? This in teaspoonful doses three times a day had done more, in Dr Jamieson's experience, to relieve the fermentation from retention, than either sulphocarbolate of soda or hyposulphite of soda.

Mr A. G. Miller explained how he happened to suggest to Dr Gillespie experimenting with ammonium chloride, and stated that he was very glad to know that the drug had been found useful.

Dr T. Burn Murdoch thanked Dr Gillespie for his very interesting paper, and expressed his appreciation of its importance and utility to practitioners. He stated that from experience gained in practice, alkalies had proved, with him, to be by far the most useful drugs in the treatment of dyspepsia. This experience, gained empirically, had now been explained scientifically by Dr Gillespie's researches. He asked Dr Gillespie if he had made experiments with any of the various pepsines in the market, as he had found them practically valueless in treating dyspepsia. He also asked if Dr Gillespie had, in the case of gastrotomy experimented upon, been able to verify the statements made by Beaumont, in the case of Alexis St Martin, upon the effects of normal digestion on various foods.

Dr Taylor said,—In case you should think, Sir, or that Dr Burn Murdoch should think, that the "hear, hear" uttered by me when he was speaking of the uselessness of preparations of pepsin was ironical, I wish to assure you that it was perfectly sincere, and that I think it is high time that we had abandoned the use of the dry bones, so to speak, of defunct animals, when we have each within springs of fresh pepsin to draw upon which can be made available by the use of wholesome and scientific stimuli, the administration of which has been so well treated of in Dr Gillespie's paper. It is gratifying to see that Dr Gillespie has come round to the opinion on which much of our practice has been based for many years,—namely, the antagonistic action of the stomach toward either acids or alkalies; and which opinion, at the time of reading his former paper, he was inclined to regard as being without sufficient foundation. If the scepticism then expressed has led up to the inquiry which has found expression in the present paper, it has had a very happy result; for it is always gratifying to find that the preconceived notions founded upon induction and observation, and justified by practice, are true, and are capable of scientific verification. The constant inverse ratio of the degree of acidity present in the stomach and the urine is to me an observation of great interest. It seems as if the stomach had the power of calling up when necessary the resources of the blood required for its use, and leaving the urine and other secretions and the blood itself so far deficient in them, and it would be useful if Dr Gillespie could devise a ready method of ascertaining the *degree* of acidity in the urine, as we might be thereby enabled to arrive at approximate conclusions regarding the state of the stomach and of the blood so far as acidity or alkalinity are concerned. Dr Gillespie has spoken of the very large doses of acid which can be administered without injury; and I would wish to remark, for the benefit of Dr Craig, that very much larger doses of alkali can be tolerated than what he and other therapeutists give a warrant for in their posological tables. This is especially true of bicarbonate of soda, with regard to which there is an impression abroad that it is injurious in larger doses than 10 or 20 grains, and dispensers are apt to correct us if we administer more. In my experience these doses are next to useless, and especially in gouty and rheumatic cases ten times that quantity can be taken with advantage. I know a gentleman who suffered from painful dyspepsia, and who was seized with paroxysms of pain so severe that he could not stand, but writhed in agony face downwards on the sofa or floor, and whose means and inclinations placed within his reach for many months the best medical skill far and near. Well, after going through a list of pharmacopœic extent, the panacea was found to be bicarbonate of soda, and this he continued to take for years, always with infallible relief, but in what doses? I have seen him after dinner go to the sideboard, where the soda was always in readiness, and take a small tablespoonful and swallow it dry. This he did for years before his death, whenever the pain came on; and notwithstanding the hundredweights he must have swallowed, no concretions or other mischief were found in his intestines when he died. This case opened my eyes to the benefit and harmlessness of large doses of soda.

Dr James Ritchie felt indebted to Dr Lockhart Gillespie for having done so much to help to place on a scientific basis the principles which had for a length of time guided many men in their treatment of indigestions. As the cause of acidity varied, so it was necessary to vary the treatment, and if alkalies were used, the time at which they were administered. In irritable conditions of the stomach with hypersecretion, they should be given immediately before food, and in such conditions the leisurely and thorough mastication of food, by increasing the flow of saliva, prolonged the time during which the amylaceous portions of food might undergo digestive changes in the stomach. He wished to state that he strongly objected to any routine use of mincing machines, purées, and other means whereby patients were prevented from using their own masticating apparatus, and thus lost the benefits of the reflex results of mastication. If the masticating apparatus were defective, the dentist's aid should be invoked, not that of a mincer. In atonic dyspepsia, alkalies should be given an hour before meals, and if this were not sufficient, acids after meals also. Dr Gillespie's experiments had proved the wisdom of giving, in such cases, little fluid with meals. In these the giving of fluid, with or without an alkali, according to conditions, three hours after a meal, when the gastric digestion should be completed, was beneficial both in flushing the stomach so as to permit it to start on the next meal with clear decks, also in supplying fluid to the system for the removal of waste products. The *amount* of alkali should be regulated by the constitution. Gouty, and especially rheumatic people, might take with advantage doses which would be prejudicial to some others. As to the *kind* of alkali, Dr Bramwell had favoured potash; but although the taste of soda was more objectionable it was less lowering, and was less prejudicial to the coloured corpuscles of the blood. Some speakers had objected to peptonising agents. Many of them were useless. Those which were active had only a limited place in treatment. He thought that if sufficient care were bestowed upon the regulation of the kind of food, its amount, the frequency of meals, or rather in many cases making them less frequent, and the chemistry of the digestive process in individual cases, there would be less need for peptonising agents.

The President thanked Dr Gillespie in the name of the Society for his admirable paper, which had evidently excited a keen interest, and had a high practical value. He directed Dr Gillespie's attention to the experiments of Roy and Sherrington on the effects of acids and alkalies on the nervous centres, and suggested their possible action on the plexus of nerve ganglia surrounding the stomach, and the relationship of those ganglia to its muscular action, to the vaso-motor condition of its mucous membrane, and to the gastric juice secretions.

Dr Gillespie, in reply, thanked the Society for their attention during a rather long and technical paper, and said that it was not intended to introduce any new subject, but to place on as scientific a basis as possible facts which were known empirically to most. He agreed with Dr Burn Murdoch that pepsin preparations, unless when made up with dilute hydrochloric acid, were of no value, except in a very few cases of dyspepsia, although peptonised foods—quite another matter—were often of the utmost service. In cases of cancer or of atonic dyspepsias with fermentation, he thought that, as the cause of the fermentation was the small amount of HCl secreted, the addition of that acid was preferable to any artificial antiseptic such as creasote, which had only a local and temporary effect, while the acid if given for some time often helped to cure the condition.

2. *Mr Cathcart* communicated for *Dr Arthur Neve*, of Cashmir, SOME NOTES ON SURGICAL ECONOMY IN HOSPITALS, which appears at page 303 of this Journal.

3. *Dr Dawson Turner* read the following NOTES ON THE PHYSICS OF AN ANEURISM:—

The most important law as regards the pressure of fluids is known as Pascal's,—*i.e.*, the equal transmissibility of fluid pressure. When pressure is communicated to a fluid it is transmitted equally in all directions through the fluid; the Bramah press depends upon this principle, because the pressure upon any area varies directly as that area,—the greater the area, the greater the pressure; if the area be a hundredfold greater, the fluid pressure upon that area will be a hundred times greater. This law, and its application to the case of an aneurism, we are all well acquainted with. If, however, we study the matter from a hydrokinetic point of view, we find that other factors must be taken into account. The case of an aneurism may be taken to be that of a fluid moving under a certain pressure through a tube of varying diameter,—moving from a tube of small sectional area into a tube of greater sectional area, and then on into a tube of small sectional area again. Experiment shows us, in this case, that the fluid pressure per unit area is actually greater in the larger tube than in the smaller one; this is because the velocity of the stream is less, and in the case of a constant steady flow, "where the velocity is greatest, there the pressure is least." A particle of fluid entering the wider part of the tube finds a greater pressure in front of it resisting its advance, than behind it urging it on. The fluid pressure on unit area, then, in an aneurism is actually greater than it is in the bloodvessel on either side of it; and it is this point that I desired to bring before the Society's notice, and that ought to be taken account of in investigating the causes of the gradual distention of aneurisms.

I have had this model constructed to illustrate these points. A number of manometers are fixed at certain distances apart in this tube; they will serve to measure the fluid pressure upon the sides of the tube. At one point the tube has a wide dilatation (to represent an aneurism). By means of the vessel that the boy will raise I can cause water to flow under a certain pressure through the tube, and it will now be observed that the water will stand highest in the manometer which is fixed in the dilated portion. Allowance must be made for the effect of friction in lowering the pressure as the water passes along the tube, for if the tubes were of uniform sectional area, each manometer would stand at a lower level than the preceding one. Another effect of an aneurism is to dam the blood back, and *to increase* the work of the heart, while it diminishes the general blood pressure beyond it; thus it may lead to dilatation of the heart and incompetence of the valves in consequence of the strain to which they are subjected. Some surgeons are inclined to regard an aneurism as a safety valve; I hesitate to take that view, because I think that an aneurism, instead of diminishing, decidedly increases the labour the heart has in maintaining the circulation.

4. *Dr Burn Murdoch's* paper, entitled NOTES ON A CASE OF CROUPOUS RHINITIS, was held as read.

INFORMATION REGARDING MEDICAL EDUCATION AND EXAMINATIONS IN EDINBURGH.

THE Royal College of Physicians of Edinburgh, The Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, have made arrangements by which, after one series of Examinations, held in Edinburgh or in Glasgow, or in Edinburgh and Glasgow, the Student may obtain the Diplomas of the Three Co-operating Bodies.

The object of the Joint Examination is to give to Students facilities for obtaining, after one series of Examinations, the Qualifications in Medicine and Surgery of the three Scottish Corporations. Students passing the Final Examination, which is a qualifying Examination under the Medical Act, 1886, will be entitled to register three Diplomas under the Medical Acts, viz.—Licentiate of the Royal College of Physicians of Edinburgh, Licentiate of the Royal College of Surgeons of Edinburgh, and Licentiate of the Faculty of Physicians and Surgeons of Glasgow.

Female Candidates are admitted to the Examinations for this Qualification equally with male candidates; and throughout these Regulations the masculine pronoun is to be read as standing for Candidates irrespective of sex.

The three Co-operating Bodies grant their *Single* Diplomas only to Candidates who already possess another and opposite Diploma in Medicine or Surgery, as the case may be. Thus the Royal College of Physicians of Edinburgh may grant its Licence on Examination to Candidates already possessed of a recognised British, Irish, Indian, or Colonial Qualification in Surgery, and the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, may each grant its Licence on Examination to Candidates already possessed of a recognised British, Irish, Indian, or Colonial Qualification in Medicine. Copies of the Regulations for the Single Qualification of any of the Bodies may be had on application to the respective Secretaries.

N.B.—Under the provisions of the Medical Act of 1886, these *Single* Qualifications do not confer the right to registration, except as additional Qualifications to those already on the Register.

GENERAL REGULATIONS.

Candidates who commenced medical study *before* 1st January 1892 shall be subjected to three Professional Examinations, herein called the First Examination, the Second Examination, and the Final Examination, to be conducted at separate times, partly in writing, and partly practically and orally. The Regulations applicable to Candidates who commence study *after* that date may be had on application to Mr James Robertson, Solicitor, 1 George Square, Edinburgh, or to Mr Alexander Duncan, B.A., Faculty Hall, 242 St Vincent Street, Glasgow.

Opportunities of entering for each of these Examinations will be presented six times in each year—four times in Edinburgh and twice in Glasgow. A Candidate at any of these Examinations may present himself either in Edinburgh or Glasgow, irrespective of the place at which he may have previously been examined.

Candidates who are unsuccessful, either at the First, the Second, or the Final Examination, or any part of these Examinations, shall be remitted to their studies for a period to be determined by the judgment of the Examiners, but not in any case less than three months.

Candidates may enter for all the subjects of an Examination at one time, or may enter for and pass in any division of subjects thereof. Candidates who have once entered for an Examination under the divisional system shall not be at liberty to complete that Examination except under the divisional system.

The pass-mark necessary in the case of a Candidate entered for an Entire Examination shall be an average of 50 per cent. of the conjoined Written and Oral, or conjoined Clinical and Oral parts, as the case may be, subject to the conditions that he obtain not less than 40 per cent. at the Written, and 50 per cent. in each of the Oral and Clinical parts.

A Candidate entered for an Entire Examination may pass in a single subject (or subjects), while failing in others, on his obtaining in the subject 50 per cent. in the Written and 60 per cent. in the Oral, or conjoined Clinical and Oral parts, as the case may be (no marks in any part being less than 50 per cent.). In such a case the Candidate on re-entering for the remaining subjects of the Examination shall be required to make in each the marks specified in the previous paragraph.

The pass-mark necessary in the case of a Candidate entered for a Division (or Divisions) of an Examination shall be on each subject of the Division an average of 60 per cent. of the conjoined Written and Oral, or conjoined Clinical and Oral parts, as the case may be, subject to the conditions that he obtain not less than 50 per cent. in the Written, and 60 per cent. in the Oral parts.

Applicants for admission to any of the Examinations are required, on entering, to lodge with the Inspector of Certificates a schedule (forms for which are supplied) showing the Courses they have attended qualifying for admission, and if not entering for the whole Examination, must state which subject or division of subjects they are to be examined on.

A Candidate entered for an *Entire* Examination who obtains at the First or Second Examination 75 per cent. in the Oral part, and not less than 50 per cent. in the Written part in each subject, shall be noted as passing that Examination "with Distinction," and at the Final Examination a Candidate who obtains an average of 75 per cent. in the conjoined Clinical and Oral parts, and not less than 50 per cent. in the Written part, in each subject shall be noted as passing "with Honours."

No Candidate can be held to be entered for any Examination till he has sent in the proper schedule, proved his course of study, and paid the appropriate fee.

At the Oral Examinations Candidates shall be examined as far as possible in the order of their entry.

The subjects of the Second Professional Examination should, as far as possible, be studied only after the First Examination has been passed; and similarly, the subjects of the Final Examination should, as far as possible, be studied only after the Second Examination has been passed. By adhering to this course the student will have his attention occupied by preparing for only one Examination at a time.

Candidates, qualified by having attended the necessary courses of study, may enter for two or more Examinations, to be passed successively at the same period, the condition being that failure to pass in all the subjects of the prior Examination precludes the Candidate from admission to the succeeding Examination. The necessary Schedule and Certificates must be lodged, and the fees for these respective Examinations paid, at the period of entering for the earliest of them. In the event of failure, the fee paid for any subsequent Examination to which a Candidate had been thereby precluded from admission to the Examination will be returned to the Candidate.

No Candidate shall be admissible to Examination who has been rejected on the subjects of the Examination by any other Licensing Board within the three preceding months.

A Candidate for the Second Examination admitted as having passed in the subjects of the First Examination at another Board shall pay the fee of Five Guineas in addition to the fee payable in respect of the Second Examination or any division thereof; and a Candidate for the Final Examination admitted as having passed in the subjects of the First and Second Examinations at another Board shall pay the fee of Ten Guineas in addition to the fee payable in respect of the Final Examination or any division thereof.

The following are the Names and Addresses of the Inspectors of Certificates:—In Edinburgh:—Mr James Robertson, Solicitor, 1 George Square. In Glasgow:—Mr Alexander Duncan, B.A., Faculty Hall, 242 St Vincent Street.

In applying for a copy of the Regulations, Candidates are requested to say whether the date of commencement of Medical Study was *before* or *after* 1st January 1892.

The following are the General Medical Council's Requirements for the Preliminary Examination of Medical Students:—

All Medical Students must register in the Medical Students' Register of the General Medical Council before they can be admitted to any Professional Examination. Whenever they have passed the Preliminary Examination in the required subjects, and commenced Medical Study at a recognised Medical School, or at a recognised University or Teaching Institution where subjects of the Medical Course are taught, they should register not later than fifteen days from the commencement of study, and should not neglect this requirement.

Students who commenced Medical Study *before* January 1st, 1892, shall have previously passed (at one or more Examinations) in the subjects of General Education, as follows:—1. English Language, including Grammar and Composition; 2. Latin, including Grammar, Translation from specified Authors, and Translation of easy passages not taken from such Authors; 3. Elements of Mathematics, comprising (*a*) Arithmetic, including Vulgar and Decimal Fractions; (*b*) Algebra, including Simple Equations; (*c*) Geometry, including the first book of Euclid, with easy questions on the subject-matter of the same; 4. Elementary Mechanics of Solids and Fluids, comprising the Elements of Statics, Dynamics, and Hydrostatics; 5. One of the following optional subjects:—(*a*) Greek; (*b*) French; (*c*) German; (*d*) Italian; (*e*) any other Modern Language; (*f*) Logic; (*g*) Botany; (*h*) Zoology; (*i*) Elementary Chemistry.[1]

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[1] Students who have passed in all the above subjects, with the exception of Mechanics, may commence study, and when they do pass in Mechanics they may be registered, and their registration antedated.

Students who commence Medical Study *after* January 1st, 1892, shall have previously passed in the subjects of General Education, as follows:—1. English Language, including Grammar and Composition; 2. Latin, including Grammar, Translation from specified Authors, and Translation of easy passages not taken from such Authors; 3. Mathematics, comprising (*a*) Arithmetic; (*b*) Algebra, as far as Simple Equations, inclusive; (*c*) Geometry, the subject-matter of Euclid, Books I., II., and III., with easy deductions; 4. One of the following optional subjects:—(*a*) Greek; (*b*) French; (*c*) German; (*d*) Italian; (*e*) any other Modern Language; (*f*) Logic.

The entire Examination must be passed *at one time*, except in the case of Examinations passed for graduation in Arts of any of the Universities recognised, or in the case of students who have, prior to January 1st, 1892, passed in part of a recognised Preliminary Examination.

No fee is payable for Students' Registration, and Registration when once effected does not require to be repeated in any succeeding year.

Forms of application for Registration may be obtained from James Robertson, Esq., Registrar of the Branch Council for Scotland, 1 George Square, Edinburgh.

The following Testimonials of having passed the Preliminary Examination in General Education are accepted by the Licensing Authorities, and entitle to Registration as Medical Students by the General Medical Council:—

(1.) UNIVERSITIES OF THE UNITED KINGDOM.

Oxford.—Examination for a Degree in Arts; Responsions; Moderations; Local Examinations (Senior), Certificate to include Latin and Mathematics; Local Examinations (Junior), Certificate to include Latin and Mathematics; and also one of the following optional subjects, viz., Greek, French, German.

Cambridge.—Examination for a Degree in Arts; Previous Examination; Local Examinations (Senior), Certificate to include Latin and Mathematics; Local Examinations (Junior), Certificate to include Latin and Mathematics, and also one of the following optional subjects, viz., Greek, French, German. Higher Local Examinations.

Durham.—Examination for a Degree in Arts; Examination for Students at the end of their first year; Examination for Certificate of Proficiency.

Oxford and Cambridge Schools' Examination Board.—Certificate to include all the subjects required.

London.—Examination for a Degree in Arts or Science; Preliminary Scientific (M.B.) Examination; Matriculation Examination.

Victoria University.—Preliminary Examination, Latin to be one of the subjects; Entrance Examination in Arts, to include all the subjects required.

Edinburgh.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Science or Medicine and Surgery. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German.

Aberdeen.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Medicine and Surgery; Local Examination (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate); Certificate to include all the subjects required.

Glasgow.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Medicine and Surgery; Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate); Certificate to include all the subjects required.

St Andrews.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Medicine and Surgery; Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate), to include all the subjects required.

Dublin.—Examination for a Degree in Arts; Public Entrance Examination; General Examination at end of Senior Freshman year.

Queen's University (Ireland)[1].—Examination for a Degree in Arts; Entrance or Matriculation Examination; Previous Examination for B.A. Degree; Local Examinations for Men and Women; Certificate to include all the subjects required by the General Medical Council.

Royal University of Ireland.—Matriculation Examination; Examination for a Degree in Arts.

(2.) OTHER BODIES NAMED IN SCHEDULE (A) TO THE MEDICAL ACT (1858).

* *Royal Colleges of Physicians and Surgeons of Ireland.*

* *Royal College of Surgeons in Ireland.*—Preliminary Examination, Certificate to include Mathematics.

* *The Society of Apothecaries of London.*—Examination in Arts.

Note.—The General Medical Council have recommended these bodies marked * to cease holding Preliminary Examinations.

(3.) EXAMINING BODIES IN THE UNITED KINGDOM NOT INCLUDED IN SCHEDULE (A) TO THE MEDICAL ACT (1858).

College of Preceptors. — Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and a Modern Language having been taken.

Intermediate Education Board of Ireland; Junior, Middle, and Senior Grades. —Certificate in each case to include all the subjects required by the General Medical Council.

† *Queen's College, Belfast; Queen's College, Cork: Queen's College, Galway.*—Matriculation Examination.

† *St David's College, Lampeter.*—Responsions Examination to include all the subjects required.

Educational Institute of Scotland.—Preliminary Medical Examination (conducted on behalf of the Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Faculty of Physicians and Surgeons of Glasgow).

† *The Pharmaceutical Society of Great Britain.*—Preliminary and Minor Examinations *pro tanto.*

† *The Pharmaceutical Society of Ireland.*—Preliminary Examination *pro tanto.*

Scotch Education Department.—Leaving Certificates in each Grade and in Honours. All the subjects must have been passed *at one time.*

(4.) INDIAN, COLONIAL, AND FOREIGN UNIVERSITIES AND COLLEGES.

The Certificates from the following Bodies must contain evidence that the Examination passed included all the subjects required by the General Medical Council. In the case of Natives of India or other Oriental countries, whose vernacular is other than English, an Examination in a classic Oriental language may be accepted instead of an Examination in Latin.

Universities of Calcutta, Madras, and Bombay.—Entrance Examination.

M'Gill College, Montreal; Bishop's College, Montreal; and University of Toronto.—Matriculation Examination.

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[1] This University was merged in the Royal University of Ireland in 1881, but Certificates previously obtained are still accepted for registration.

Trinity College, Toronto; Queen's College, Kingston; Victoria College, Upper Canada.—Matriculation Examination.

Western University of Ontario.—Entrance Examination in Medicine.

College of Physicians and Surgeons of Ontario.—Preliminary Examination.

University of Manitoba.—Previous Examination.

King's College, Nova Scotia.—Matriculation Examination; Responsions.

University of Halifax, Nova Scotia.—Matriculation Examination.

University of Fredericton, New Brunswick.—Matriculation Examination.

Mount Allison College, New Brunswick, Canada.—Examination for a Degree in Arts.

Dalhousie College and University, Halifax, Nova Scotia.—Matriculation and Sessional Examinations.

Provincial Medical Board of Nova Scotia.—Matriculation Examination.

† *University of California.*—Examination in Department of Letters.

University of Melbourne.—Matriculation Examination.

University of Sydney.—Matriculation Examination.

University of the Cape of Good Hope. — Matriculation Examination; Examination for a Degree in Arts.

University of Adelaide.—Matriculation Examination or its substitute—the Senior Public Examination, Junior Public Examination.

Codrington College, Barbados.—English Certificate for Students of two years' standing, and Latin Certificate, or "Testamur."

University of Tasmania.—Examination for the Degree of Associate of Arts.

Christ's College, Canterbury, New Zealand.—Voluntary Examinations.

University of New Zealand.—Entrance Examination.

University of Otago, New Zealand.—Preliminary Examination.

Ceylon Medical College.—Preliminary Examination (Primary Class).

Germany and other Continental Countries.—Gymnasial, Abiturienten-Examen, and other Corresponding Entrance Examinations to the Universities.

† *Gymnasia of the Circuit of Dorpat.*—Examinations of Maturity.

Egyptian Government.—Secondary Education Certificate, Arabic being accepted as a classic language in place of Latin.

Note.—The Preliminary Examinations of these Boards marked † will not be accepted for Registration, unless in the case of students who had passed them before 1st January 1892.

The following pages contain a tabular abstract of the regulations of the various Licensing Boards, as well as a list of the Hospitals, Dispensaries, etc., attached to our Edinburgh Medical Schools; also the regulations for the Army, Indian, and Navy Medical Services. The space at our disposal does not allow of more detailed information. But, in point of fact, the regulations of all Licensing Boards now correspond much more closely than they used to do, and the regulations of the General Medical Council afford a key to the general requirements of all of them. For special information, application should always be made to the Secretaries of the Licensing Boards; or, in the case of the Universities, recourse may be had to the published Calendars.

The *Preliminary Examinations* are usually held before the commencement, and at the end, of the Winter Session,—viz., in October, March, or April—sometimes also at the end of the Summer Session. The Professional Examinations in Universities are usually after the Winter and during the Summer Sessions; in Edinburgh, however, the first Professional is held in October as well as April. The other Licensing Boards' Examinations are held at various periods throughout the year. Special Examinations, under circumstances of urgency, can be held at almost any time; but they, of course, entail considerable addition to the expense.

COURSE OF STUDY REQUIRED BY THE VARIOUS BOARDS OF THE UNITED KINGDOM.

	Age.	Anatomy.	Dissections.	Chemistry.	Practical Chemistry.	Materia Medica.	Physiology.	Surgery.	Practice of Medicine.	Midwifery.	Medical Jurisprudence.	Pathology or Morbid Anatomy.	Botany.	Natural History.	Practical Pharmacy.	Clinical Surgery.	Clinical Medicine.	Hospital Attendance.	Practical Midwifery.	Dispensary or Out-door Practice.	Vaccination.
	Years.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	
Edinburgh University, M.B. & C.M., . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	3 mo.‡ or 6 cas.	6	
University of Glasgow, M.B. & C.M., . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
University of Aberdeen, M.B. & C.M., .	21	6	6	6	3	6	6	6	6	6	3		3	3	3	6	6	24	do.	6	
University of St Andrews, M.B. & C.M., .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
London University, M.B., ...	21	6	12	6	1 crs.	1 crs.	6	6	6	1 crs.	1 crs.	1 crs.			1 crs.	2 yrs.	2 yrs.	4 yrs.	20 cas.	6	
University of Durham, M.B. & M.D., . .	21												3								
Dublin University, M.B., ...		6	6	6	3	3	3	6	6	6	3		3				9	24	6 mo.		
" " Surgical Diploma, .		12	18	6	3	6	18	12	6	6	3		3			27	27	27			
The Queen's University of Ireland, M.D.,		12	12	6	3	6	12	6	6	6	3		3	3	3 mos.	12	12	24	3 mo.		
Royal College of Physicians, London, .	21	12	12	6	3	3	12	6	12	3	3	6	3		3	9	9	24	20 cas.		
Royal College of Physicians, Edinburgh,	21	6	6	6	3	3	6	6	6	3	3	3	3		3	3	6	24	6 cases		
King and Queen's Col. of Phys. Ireland, .	21	6	12	6	6	6	6	6	6	6	6		6			6	21	27	6 mo.		
Royal College of Surgeons, London,* . .	21	12	12	6		3	12*	12	6	3					3	27*	9*	33			Cert.
Royal College of Surgeons, Dublin, . .	21	18	18	6	6	3	18	18	6	3	3					18	9	27			
Royal College of Surgeons, Edinburgh, .	21	12†	12	6	3	3	6	6†	6	3	3	3			3	9†	9	24	6 cas.	6	Cert.
Faculty of Phys. and Surgeons, Glasgow,	21	12	12	6	3	3	3	6 or 12	6	3	3				3	6 or 12	6	24	6 cas.		
For Triple Qualification by Royal Colleges of Phys. and Surgs. of Edinburgh, and Faculty of Phys. and Surgs. of Glasgow, ...	21	6	12	6	3	3	6	6	6	3	3	3			3	9	9	24	6 cas.	6	Cert.
Apothecaries' Hall, England, ...	21	12	6	6	3	3	6		12	3	3	6	3		Appr.		27	27	20 cas.		9 mo.
,, ,, Ireland, ...	21	6	12	6	3	3	6	6	6	6	3		3		Appr.	9	18	27	20 cas.		

English Poor-Law Board.—Candidates for the appointment of Medical Officer are required to be registered under the Medical Act, and must be legally qualified to practise both Medicine and Surgery, in virtue of Diplomas or Licenses granted by competent legal authority in England, Scotland, or Ireland.

Information respecting exceptions to these regulations under various circumstances, and other details as to the order in which, according to some Licensing Bodies, the courses should be taken out, etc., must be obtained by consulting the published Charts of the Colleges, etc. *Students should apply to the Secretary to each Board which they intend to pass for a detailed copy of its Regulations.*

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* Students from the Schools of Scotland are admitted to examination at the Royal College of Surgeons of England, if they have followed the course of study required by the regulations of the Royal College of Surgeons of Edinburgh. Students in Scotland, therefore, are not required to attend more than one course of Physiology, six months Clinical Surgery, six months Clinical Medicine, and twenty-four months Hospital.

† Or Candidates may take six months Lectures and eighteen months Dissections. A third Course of Surgery is required, but it may be either Principles and Practice of Surgery or Clinical Surgery.

‡ In lieu of the above, the University of Edinburgh requires as an alternative, attendance on at least Twelve Cases of Labour under the superintendence of a registered Medical Practitioner.

MEDICAL SCHOOLS OF SCOTLAND, 1894-95.

WINTER SESSION.

Subjects.	University of Edinburgh.	School of Medicine, Edinburgh.	University of Glasgow.	Anderson's Coll. Med. School, Glasgow.	St Mungo's College, Glasgow.	University of Aberdeen.	University of St Andrews.
Anatomy, Systematic and Practical, with Demonstrations.	Prof. Sir W. Turner.	Mr Macdonald Brown and Dr R. Whitaker.†	Professor Cleland.	Dr A. M. Buchanan.	Prof. Kent and Demonstrators.	Professor Reid.	Prof. J. Yule Mackay, Dundee.
Physiology and Advanced Practical Physiology.*	Professor Rutherford.	Dr N. Paton.	Professor M'Kendrick.	Dr D. Campbell Black.	Prof. John Barlow.	Professor M'William.	Prof. Pettigrew, St Andrews, Prof. Reid, Dundee.
Chemistry, and Practical Chemistry.	Professor Crum Brown.	Dr Macadam, Mr King, Mr I. Macadam, Mr. R. Paterson, Dr Aitken, and Dr Readman.	Professor J. Ferguson.	Professor J. Robertson Watson.	Professor T. R. Marshall.	Prof. Japp.	Professor Purdie, St Andrews, Professor Jas. Walker, Dundee.
Materia Medica & Therapeutics.	Professor Fraser.	Drs Craig & Stockman.†	Professor Charteris.	Dr R. Barclay Ness.	Prof. John Dougall.	Professor Cash.	...
Practice of Medicine.	Professor Sir Thomas Grainger Stewart.	Drs Wyllie, James, Affleck, Bramwell, G. A. Gibson, and Philip.†	Professor Gairdner.	Dr S. Gemmell.	Professor Robertson.	Professor Finlay.	...
Surgery.	Professor Chiene.	Mr Caird, Hodsdon, Shaw M'Laren, and A. Thomson.	Professor William Macewen.	Dr Dunlop.	Prof. Clark.	Professor A. Ogston.	Dr MacEwan, Dundee.
Midwifery, etc.	Professor Simpson.	Drs Milne Murray, Matheson, & Haultain.	Professor Murdoch Cameron.	Dr W. L. Reid.	Prof. Stirton (in Summer).	Professor Stephenson.	...
Physics.	Professor Tait.	Dr Dawson Turner and Mr Henderson, B.Sc.	M. Maclean, M.A.	Professor Alexander.	Prof. Blyth.	Prof. Niven.	Prof. Butler, St Andrews, Prof. Steggall, Dundee.
Natural History, and Practical Natural History.	Professor Ewart.	Mr J. Arthur Thomson.	Professor Young.	Dr George Bell Todd.	Professor Malcolm Laurie.	Professor A. Nicholson.	Prof. M'Intosh, St Andrews, Prof. Thompson, Dundee.
Practical Botany.	Professor Bayley Balfour.	Mr M'Alpine.	Professor Bower (in January).	Prof. King.	Professor Swanson.	Prof. Trail (practical).	Prof. Geddes, Dundee, Mr Robertson, St Andrews.
Pathology.	Professor Greenfield.	Dr A. Bruce, Dr W. Russell, and Dr Leith.	Professor J. Coats.	At Royal or Western Infirmary.	Prof. J. L. Steven.	Professor Hamilton.	...
Clinical Medicine.	Profs. Sir T. G. Stewart, Fraser, Greenfield, and Simpson on Diseases of Women.	Drs Wyllie, Affleck, Smart, and James. Dr H. Croom for Diseases of Women.‡	Prof. M'Call Anderson and Prof. Gairdner.	Physicians of the Royal or Western Infirmary.	Prof. D. C. M'Vail and Physicians of the Royal Infirmary.	Prof. Finlay and Drs Fraser and Blaikie Smith.	Dr A. M. Stalker and J. Mackie Whyte, M.A., M.B., Dundee.
Clinical Surgery.	Professor Annandale.	Mr Duncan, Mr Miller, Dr P. H. Maclaren, and Dr MacGillivray.†	Prof. George Buchanan and Prof. Macewen.	Surgeons of the Royal or Western Infirmary.	Prof. Knox and Surgeons of the Royal Infirmary.	Drs Ogston, Garden, and Booth.	Drs MacEwan and Templeman, Dundee.
Medical Jurisprudence and Public Health.	Prof. Sir Douglas Maclagan.	Dr Littlejohn.	Professor Simpson (in Summer).	Hygiene and Public Health: Dr W. Campbell Downs and Prof. J. Robertson Watson.	Professor Glaister and Dr John C. M'Vail.‡	Professor Hay (in Summer).	...

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* This course is equivalent to that given under the name of General Anatomy and Physiology in the English Schools. Special schedules are issued by the London Boards for their Scotch Students, which ould always be inquired for.

These are not conjoint courses, but separate ones by the gentlemen named. ‡ This is a joint course.

In connexion with the University of Edinburgh, during the Winter Session classes of Practical Materia Medica (including Pharmacy), Physiology, and Practical Pathology are taught by the Professors of these subjects and their Assistants; lectures and clinical instruction on Diseases of Children, at Royal Hospital for Sick Children, are given by Dr James Carmichael and Dr Playfair.

Lectures are given in the School of Medicine, Edinburgh, during the Winter Session on Anatomy, Chemistry, Physics, Natural History, Biology, Botany, Physiology, Materia Medica and Therapeutics, General Pathology and Morbid Anatomy, Surgery, Practice of Physic, Midwifery and Diseases of Women and Children, Medical Jurisprudence and Public Health, Diseases of Children, Vaccination, Diseases of the Ear, Throat, Eye, Skin, and Chest, Systematic and Clinical Gynæcology, Clinical Midwifery, Diseases of the Tropics and Climatology.

Courses on the above subjects are also given in the Summer Session, with the addition of Insanity, Physical Diagnosis, Medical Electricity, Laryngology, and Medical Ophthalmology.

There are Special Classes for Women on the above subjects in both Winter and Summer Sessions.

In connexion with the University of Glasgow, Dr Yellowlees lectures on Mental Diseases, and Dr T. Reid on Diseases of the Eye, both in Summer. Practical Surgery is taught during the Summer Session in the University of Glasgow by Professor Macewen.

Lectures are given in St Mungo's College, Glasgow, during the Winter Session, on Advanced Embryology by Prof. Laurie; on Gynæcology by Dr Kelly; on Ophthalmology by Prof. Napier; and on Diseases of the Throat and Nose by Dr Fullerton.

Lectures are given in Anderson's College Medical School during the Winter Session, on Ophthalmic Medicine and Surgery by Dr Meighan, on Diseases of the Throat and Nose by Dr John Macintyre, on Aural Surgery by Dr Thomas Barr, and on Zoology by Dr G. Bell Todd. In the Western Medical School Dr A. Brown Kelly lectures on Diseases of the Throat and Nose, and Dr Freeland Fergus on the Eye.

Clinical Instruction in Mental Diseases is given in connexion with University College, Dundee, by Dr Rorie, Royal Asylum, Dundee.

MEDICAL SCHOOLS OF SCOTLAND, 1895.

SUMMER SESSION.

SUBJECTS.	UNIVERSITY OF EDINBURGH.	SCHOOL OF MEDICINE, EDINBURGH.	UNIVERSITY OF GLASGOW.	ANDERSON'S COLLEGE MEDICAL SCHOOL, GLASGOW.	ST MUNGO'S COLLEGE, GLASGOW.	UNIVERSITY OF ABERDEEN.
Practical Anatomy and Demonstrations.	Prof. Sir Wm. Turner.	Mr M. Brown.	Professor Cleland.	Dr A. M. Buchanan.	Prof. Kent and Demonstrators.	Professor Reid.
Botany and Practical Botany.	Professor Bayley Balfour.	Mr A. N. M'Alpine.	Professor F. O. Bower.	Prof. King.	Prof. James Swanson.	Professor Trail.
Materia Medica and Therapeutics and Practical Materia Medica.	Professor Fraser.	Dr Craig and Dr Stockman.*	Professor Charteris.	Dr R. Barclay Ness.	Professor Dougall (in Winter).	Professor Cash.
Midwifery and Gynæcology.	Professor Simpson.	Drs Croom, B. Hart, F. Barbour, and J. H. Ferguson.*	Professor Murdoch Cameron.	Dr W. L. Reid.	Prof. James Stirton.	Prof. W. Stephenson.
Medical Jurisprudence and Public Health.	Professor Sir Douglas Maclagan.	Dr Littlejohn.†	Professor Simpson.	Dr T. Kennedy Dalziel.	Prof. Glaister and Dr J. C. M'Vail.‡	Professor M. Hay.
Practical Anatomy.	Prof. Sir Wm. Turner.	Mr M. Brown.	Professor Young.	Dr A. M. Buchanan.	Prof. Kent.	Prof. Reid.
Practical Physiology, incl. Histology.	Professor Rutherford.	Dr Noël Paton.	Professor M'Kendrick.	Dr D. Campbell Black.	Prof. Barlow.	Professor M'William.
Practical Pathology.	Professor Greenfield.	Dr A. Bruce, Dr W. Russell, and Dr Leith.	Professor Joseph Coats.	At Royal or Western Infirmary.	Prof. J. L. Steven.	Professor Hamilton.
Organic and Practical Chemistry.	Professor Crum Brown.	Dr Macadam, Mr King, Mr I. Macadam, Mr R. Paterson, Dr A. P. Aitken, and Dr Readman.*	Professor J. Ferguson.	Professor J. Robertson Watson.	Professor T. R. Marshall.	Professor Japp.
Operative Surgery and Surgical Anatomy.	Professor Chiene.	Dr C. W. MacGillivray, Mr C. W. Cathcart, Mr Caird, and Mr Hodsdon.*	Professor William Macewen.	Dr Dunlop.	Dr Whitson.	Professor A. Ogston.
Mental Diseases.	Dr Clouston.	Dr J. B. Tuke.	Dr Yellowlees.	Dr Carswell.	Dr A. C. Clark.	Dr Wm. Reid.
Natural History.	Professor Ewart.	Mr J. Arthur Thomson.	Professor Young.	Dr George Bell Todd.	Prof. Malcolm Laurie (in Winter).	Professor Nicholson.
Clinical Medicine.	Profs. Sir T. G. Stewart, Fraser, Greenfield, and Simpson on Diseases of Women.	Drs Wyllie, Affleck, Smart, and James. Dr H. Croom for Diseases of Women.‡	Prof. M'Call Anderson and Prof. Gairdner.	Physicians of the Royal or Western Infirmary.	Prof. M'Vail and Physicians of the Royal Infirmary.	...
Clinical Surgery.	Professor Annandale.	Mr Duncan, Mr Miller, Dr P.H. Maclaren, and Dr MacGillivray.	Prof. George Buchanan and Prof. Macewen.	Surgeons of the Royal or Western Infirmary.	Prof. Knox and Surgeons of the Royal Infirmary.	...

In connexion with the University of Edinburgh, during the Summer Session classes of Practical Botany, Practical Natural History, and Practical Hygiene, are taught by the Professors of these subjects and their Assistants; lectures and clinical instruction on Diseases of Children, at Royal Hospital for Sick Children, are given by Dr J. Carmichael and Dr Playfair; and on Diseases of the Eye by Dr D. Argyll Robertson. In Glasgow University there are also classes of Practical Botany and Practical Natural History taught by the Professors of these subjects and their Assistants.

In connexion with St Mungo's College, during the Summer Session, Dr Adams will lecture on Surgical Diseases of Children; Dr Love on Otology; Dr Morton on Dermatology; and Dr Workman on Bacteriology.

In connexion with Anderson's College Medical School, during the Summer Session Dr Meighan will lecture on Ophthalmic Medicine and Surgery, and Dr Carswell on Mental Diseases.

In Aberdeen, Special Courses of Instruction are given during the Summer Session on Insanity, Dental Surgery, Diseases of Children, of the Eye, Ear, and Throat, of the Skin, and in Fevers (City Hospital).

* These are not conjoint courses, but separate ones by the gentlemen named.

† Dr Littlejohn gives courses during both the Winter and Summer Sessions. ‡ This is a joint course.

*** For additional Summer Courses on special subjects, see the Prospectus of each School.

In connexion with the Summer Session of the Medical Schools in Scotland, instruction in Vaccination is given at the Royal Public Dispensary, Edinburgh, both Summer and Winter, by Dr Husband; and in the Western Dispensary and Cowgate Dispensary, by Dr Buist; at the Faculty Hall, Glasgow, on Mondays at 2, by Dr Thomson; at the Royal Infirmary, Glasgow, on Mondays and Thursdays at 12 o'clock, by Dr Thomson; and in Aberdeen at the Vaccine Institution.

Medical Psychology and Insanity are taught in Summer by Dr Clouston and Dr J. B. Tuke in Edinburgh; in Glasgow by Dr Yellowlees, Dr Carswell, and Dr A. C. Clark; and in Aberdeen by Dr Wm. Reid.

Practical Medicine and Physical Diagnosis by Dr James, Dr Affleck, Dr Gibson, Dr Byrom Bramwell, and Dr Philip in Edinburgh.

Diseases of Children by Mr J. Bell, Dr Burn Murdoch, and Dr M. Dunlop in School of Medicine, Edinburgh; in St Mungo's College by Dr Adams, Glasgow; by Professor Stephenson, Drs Garden, MacGregor, and Rose at Children's Hospital, Aberdeen.

Diseases of Infancy and Childhood by Dr John Thomson and Dr J. W. Ballantyne in School of Medicine, Edinburgh.

Diseases of the Chest by Dr R. W. Philip in School of Medicine, Edinburgh.

Diseases of the Eye by Mr George Berry in School of Medicine, Edinburgh, Dr M'Kenzie Davidson in Aberdeen, and by Dr Thomas Reid, Dr Meighan, Prof. Napier, and Dr Freeland Fergus in Glasgow.

Diseases of the Ear by Dr Kirk Duncanson, and Diseases of the Ear and Throat by Dr M'Bride in School of Medicine, Edinburgh; and of the Ear by Dr J. Kerr Love and Dr Barr in Glasgow; of the Nose and Throat by Dr Macintyre in Glasgow; and in Aberdeen, Ear and Larynx Diseases by Dr M'Kenzie Booth.

Diseases of the Throat and Nose by Dr John Macintyre, Dr Fullerton, and Dr A. Brown Kelly in Glasgow.

Diseases of the Skin by Dr Allan Jamieson and Dr Stewart Stirling in School of Medicine, Edinburgh; in Aberdeen by Dr Garden; and in Glasgow by Professor M'Call Anderson and Dr Alex. Morton.

Dental Surgery by Dr W. H. Gray in Glasgow, and Dr Williamson in Aberdeen.

Laryngology and Medical Ophthalmology in Edinburgh by Dr John Wyllie.

Diseases of the Tropics and Climatology in Edinburgh by Dr R. W. Felkin.

Lectures on Public Health are delivered during the Summer Session in Aberdeen by Professor Hay; in School of Medicine, Edinburgh, by Dr Littlejohn; in Glasgow by Prof. Simpson, Dr W. Campbell Downs, Prof. Glaister, and Dr J. C. M'Vail.

Systematic Gynæcology in School of Medicine, Edinburgh, by Dr Brewis; and in St Mungo's College, Glasgow, by Dr Kelly.

Clinical Gynæcology and Practical Midwifery in School of Medicine, Edinburgh, by Drs Croom and Brewis.

EDINBURGH ASSOCIATION FOR THE UNIVERSITY EDUCATION OF WOMEN.

Women attending the University of Edinburgh are invited to make use of the Rooms recently opened by the Association at 8 Hope Park Square. Facilities for study and the use of the Library are offered free of charge. Louisa Stevenson, *Hon. Secretary.*

EDINBURGH SCHOOL OF MEDICINE FOR WOMEN.

President.—H.R.H. THE DUCHESS OF FIFE.

This School was established in 1886, by members of the Executive Committee for Promoting the Medical Education of Women (founded in 1871), on the opening of the Examinations of the Conjoint Scottish Colleges to Women. It occupies premises in Surgeon Square, which are already of historic interest, having been built more than a century ago for a Medical School, and so used, with a short interval, ever since. Its lecture theatre, lighted from above and seated for about two hundred students, has been occupied in succession by Messrs Lizars, Allen Thomson, Lonsdale, Handyside, Spence, and a number of other distinguished men; and its lofty anatomy room is one of the best in Edinburgh. For Clinical Teaching its Students have access to the Royal Infirmary, where 80 beds are set apart for the Clinical Instruction of Women, with periodical teaching also in special wards for Diseases of the Eye, Skin, etc. The Fees have been fixed on the lowest scale on which it is possible at the same time to adequately remunerate first-rate Lecturers, and to place the School on an ultimately self-supporting basis, viz., £95 for the whole curriculum at School and Hospital. Several Scholarships are available for those needing such assistance. *Dean* of the School, Dr Sophia Jex-Blake. *Secretary*, Miss Black, School of Medicine, Surgeon Square.

THE MEDICAL COLLEGE FOR WOMEN, 30 CHAMBERS STREET, EDINBURGH.

This College was founded and is conducted by the "Scottish Association for the Medical Education of Women," with the special object of affording to Lady Students exactly the same facilities for Medical Study as are offered to Male Students in the School of Medicine, Edinburgh. The arrangements for Teaching and the Fees charged are similar to those of the School of Medicine, so that, generally speaking, the regulations of that School may be considered as applicable to the Students of the College. The College affords to Ladies desirous of studying Medicine an opportunity of prosecuting' a complete Course of Medical Study, or of attending any individual Class or Classes. The Classes are also open to all Ladies whether studying Medicine or not. *Secretary*, Miss D. M. Scott.

QUEEN MARGARET COLLEGE, WOMEN'S DEPARTMENT OF THE UNIVERSITY OF GLASGOW.

This College became in 1892 the Women's Department of the University of Glasgow, by the transfer of its buildings, endowments, and government to the University on the promulgation of the Ordinance issued in that year, empowering the Courts of the Scottish Universities to make provision for the instruction and graduation of women. Its classes are taught by Professors of the University and other Lecturers appointed by the University Court; the curriculum, regulations, and fees are the same as those of the male students of the University, and the University Degrees in Medicine and Arts are open to women on the same conditions as to men. Full preparation is given in the College for these Degrees. In July of this year, for the first time in the history of any Scottish University, women students graduated in Medicine, degrees of M.B. C.M. having been conferred by the University of Glasgow on two students of Queen Margaret College, one of whom obtained these with "High Commendation."

A large new building, affording additional facilities for medical study, is being added to the College, and is to be ready for occupation in spring; and a Hall of Residence for students from a distance is to be opened at the beginning of the coming Winter Session.

LIST OF HOSPITALS, DISPENSARIES, ETC., IN CONNEXION WITH THE MEDICAL SCHOOLS OF EDINBURGH.

ROYAL INFIRMARY, including LOCK HOSPITAL. (Three Wards are reserved for the Clinical Instruction of Women Students.) 740 Beds and 40 Cots. Visits daily from 11 till 2 P.M. Consulting Physicians, Dr George W. Balfour, Professor Sir Douglas Maclagan, Dr Claud Muirhead, and Dr D. J. Brakenridge. Physicians, Professors Sir Thomas Grainger Stewart, Fraser, and Greenfield; Drs John Wyllie, J. O. Affleck, Andrew Smart, and Dr Alex. James; Prof. Simpson and Dr J. Halliday Croom (for Diseases of Women); Dr Allan Jamieson (for Diseases of the Skin). Assistant Physicians, Drs Byrom Bramwell, George A. Gibson, Alexander Bruce, R. W. Philip, William Russell, J. Murdoch Brown, Ralph Stockman, and George Lovell Gulland; Drs D. Berry Hart and A. H. Freeland Barbour (for Diseases of Women). Assistant Physician for Diseases of the Skin, Dr Norman Walker. Consulting Surgeons, Dr Patrick Heron Watson and Mr Joseph Bell. Extra Surgeon, Mr John Duncan. Consulting Dental Surgeon, Dr John Smith. Surgeons, Professors Annandale and Chiene, Mr A. G. Miller, Dr P. H. Maclaren, and Dr Chas. W. MacGillivray. Assistant Surgeons, Drs J. M. Cotterill, Charles W. Cathcart, Francis M. Caird, J. W. B. Hodsdon, J. Shaw M'Laren, David Wallace, and Alexis Thomson. Ophthalmic Surgeons, Dr Argyll Robertson and Mr George A. Berry. Surgeon to the Ear and Throat Department, Dr P. M'Bride. Assistant Ophthalmic Surgeons, Drs George Mackay and W. George Sym. Assistant Surgeon to the Ear and Throat Department, Dr R. M. Johnston. Dental Department, Surgeons of the Edinburgh Dental Hospital and School. Pathologists, Drs R. F. C. Leith and Robert Muir. Registrars,—*Medical*, Dr A. L. Gillespie; *Surgical*, Dr K. M. Douglas.

CONVALESCENT HOUSE, Corstorphine. Surgeon, Mr Alex. Matthew.

CHALMERS HOSPITAL FOR THE SICK AND HURT (Public and Private Wards). 40 Beds for medical and surgical patients. In Private Wards the patients are charged 5s. per diem for board. Minimum charge, £1, 1s. Physician, Dr D. J. Brakenridge. Surgeon, Dr P. H. Watson. Resident Medical Officer, Archd. N. S. Carmichael, M.B., C.M. Secretary, J. Wilson Brodie, C.A., 13 Queen Street.

ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL. 30 Beds; about 300 in-patients and 550 out-patients yearly. Consulting Physicians, Drs Moir and Graham Weir. Consulting Surgeon, Professor Annandale. Physicians, Professor Simpson, Drs Halliday Croom, Underhill, and Berry Hart. Assistant Physicians, Drs Freeland Barbour and Milne Murray. Secretary and Treasurer, Andrew Scott, C.A.

ROYAL EDINBURGH HOSPITAL FOR SICK CHILDREN. 80 Beds; number of patients for 1893, 8768. Consulting Physicians, Dr Graham Weir, Dr Geo. W. Balfour, Dr R. Peel Ritchie, and Prof. Sir T. Grainger Stewart. Consulting Surgeon, Professor Annandale. Surgeon, Mr Joseph Bell. Assistant Surgeon, Dr H. Stiles. Pathologist, Dr Alexander Bruce. Ordinary Physicians, Dr James Carmichael, Dr John Playfair, and Dr Burn Murdoch. Extra Physicians, Dr G. H. Melville Dunlop, Dr John Thomson, and Dr A. S. Cumming. Surgeon-Dentist, Dr John Smith. Ophthalmic Surgeon, Dr Argyll Robertson. Resident Physicians, Drs Geo. Elder and R. Hutchison. Matron, Miss Bird. Honorary Secretaries, Messrs Henry & Scott, W.S., 20 St Andrew Square.

ROYAL PUBLIC DISPENSARY AND VACCINE INSTITUTION. About 12,000 patients annually. Consulting Physician, Dr George Balfour. Consulting Surgeon, Dr Littlejohn. Medical Officers, Drs W. Husband, Andrew, P. Young, A. Black, Dunlop, Blaikie, Wallace, Haultain, Stiles, W. G. A. Robertson, Hutchison, and A. Logan Turner. Midwifery and Diseases of Women, Drs Andrew, Young, and Dunlop. Vaccination, Dr W. Husband. Diseases of the Ear and Throat, Dr Blaikie. Mental Diseases, Dr J. Batty Tuke, senr. Apothecary, Mr W. Duncan. Clinique daily at 3 P.M. Vaccination, Wednesday and Saturday, 12 noon. Midwifery and Diseases of Women, Tuesday and Friday, 1 P.M. Laboratory, 3 P.M. and 7 P.M. Secretary, R. C. Gray, S.S.C. James Andrew, M.D., Secretary to the Medical Officers.

NEW TOWN DISPENSARY, 17 Thistle Street. About 10,000 patients annually. Medical Officers, Drs Thyne, Dunlop, Miller, Gillespie, Boyd, and J. J. Douglas. Acting Physicians-Accoucheur, Drs Wood and Ferguson. Superintendent of Vaccination, Dr Cadell. Diseases of the Ear and Throat, Dr Moore. Diseases of the Eye, Dr Macdonald. Diseases of Women, Dr Brewis. Diseases of Children, Dr Thomson. Mental Diseases, Dr Batty Tuke, jun. Surgical Department, Dr Miles. Clinique daily at 3 P.M. Vaccination on Tuesdays and Fridays at 12.

THE EDINBURGH PROVIDENT DISPENSARY, Marshall Street. Upwards of 12,000 patients annually. Consulting Physician, Dr Andrew Smart. Consulting Surgeons, Drs Joseph Bell and C. W. Cathcart. Gynæcology, Drs Berry Hart and Milne Murray, with Drs W. Fraser Wright and R. K. Young. Diseases of Skin, Dr Norman Walker. Diseases of Ear and Throat, Dr M'Kenzie Johnston. Diseases of Eye, Dr George Mackay. *In-Patients*—Drs Cattanach, Thyne, and Douglas Watson. Assistant Medical Officer, Dr Jas. L. Thompson. Out-door practice and Practical Midwifery daily. Surgical Instrument Maker, A. Young, Forrest Road. Janitor, T. Johnstone. Attendance at this Institution qualifies for the University of Edinburgh, the other Universities, and the Royal Colleges of Physicians and Surgeons.

WESTERN DISPENSARY, Chalmers Institute, Ponton Street, Fountainbridge. Chairman, James Simson. Acting Committee, Mrs Black, Miss Thomson, Miss M. Douglas, S. Henderson, Stair Kerr, Dr Bruce Bremner, Wm. Brown, A. Dickison, Dr Pringle, E. Mather, Wm. Manuel, J. Arnot, Rev. G. D. Low, M.A., J. S. Ferrier, Robert Simson, Miss Reid. Consulting Physicians, Dr A. Peddie and Dr Murdoch Brown. Consulting Surgeon, Mr Joseph Bell. Consulting Physician for Diseases of Women, Dr Croom. Physicians, Drs R. A. Fleming, John Stevens, and Tillie. Surgeon, Dr Alexis Thomson. Diseases of the Ear and Throat, Dr Hunter Mackenzie. Diseases of Women, Dr Ballantyne. Vaccination Officer, Dr J. B. Buist. Midwifery, Dr Ballantyne. Diseases of the Eye, Dr Usher. Assistant to Specialists, Dr Farquharson. Dispenser, A. T. Whyte. Secretary to Medical Board, Dr J. Murdoch Brown. Treasurer, James Simson, 51 Manor Place. Open daily from 3.45 to 4.45 P.M. Diseases of Women, Monday and Thursday, 4.45 P.M. Diseases of Throat and Ear, Monday, 4 P.M. Vaccination, Thursday, 3 P.M. Special Surgical Cases, Wednesday, 4 P.M. Diseases of the Eye, Thursday, 4 P.M.

EDINBURGH MEDICAL MISSIONARY SOCIETY MISSION DISPENSARY, 39 Cowgate. About 10,000 patients annually. Consulting Physician, Dr Byrom Bramwell. Consulting Physician (Accoucheur), Dr Underhill. Consulting Surgeon, Mr Cathcart. Medical Officers, Drs R. W. Felkin, G. Keppie Paterson, Dawson Turner, J. M. Farquharson, and E. F. Armour. Superintendent, Dr E. Sargood Fry. Resident, Dr F. M. Graham. Dispenser, Mr R. Wolfendale. Vaccination, Dr Buist, Mondays, 4 P.M. Diseases of Women, Dr A. H. F. Barbour, Tuesdays and Thursdays, 4 P.M. Diseases of Children, Dr J. Ballantyne, Wednesdays, 3 P.M. Patients seen daily, 3 P.M. Surgical cases seen daily, 6 P.M.

ROYAL ASYLUM FOR THE INSANE. About 870 patients, over 340 of whom are private patients. Physician, Dr Clouston.

EYE, EAR, AND THROAT INFIRMARY, 6 Cambridge Street, Lothian Road, Edinburgh. Consulting Surgeon, Joseph Bell, F.R.C.S.E. Surgeons, J. J. Kirk Duncanson, M.D., F.R.C.P.E., G. Hunter Mackenzie, M.D., William George Sym, M.D., and Alexander Black, M.D. Eye Clinique daily at 1 P.M. Ear

Clinique on Mondays, Thursdays, and Saturdays, at 12 noon. Throat Clinique on Tuesdays and Fridays at 4 P.M.

INCORPORATED EDINBURGH DENTAL HOSPITAL AND SCHOOL, 31 Chambers Street. Consulting Physician, Alexander Peddie, M.D., F.R.C.P.E. Consulting Surgeon, Joseph Bell, F.R.C.S.E. Consulting Dental Surgeon, John Smith, M.D., LL.D., F.R.C.S.E. Lecturers, Messrs Andrew Wilson, W. Bowman Macleod, and G. W. Watson. Dental Surgeons, W. Bowman Macleod, A. Wilson, M. Macgregor, G. W. Watson, J. S. Durward, James Mackintosh, and W. Forrester. Assistant Dental Surgeons, John S. Amoore, J. G. Munro, John Turner, David Monroe, F. Page, and T. Gregory. Extra Assistants, Sewill Simmons, R. N. Hannah, Hume Purdie, Alex. Wilson, J. Malcolm, and D. Baillie Wilson. Tutorial Dental Surgeon, Robert Lindsay, L.D.S. Chloroformists, J. M. Farquharson, M.B., C.M., W. Lundie, M.D., C.M., B.Sc., Mathieson Cullen, M.D., C.M., and Basil Orr, M.D. Dean, W. Bowman Macleod. Hon. Treasurer, Thomas Wallace, F.F.A., 64 Princes Street. Hon. Secretary, G. M. Stuart, W.S., 56 Frederick Street. Daily, 9 to 10 A.M. Average number of patients, 9000 per annum.

ARMY MEDICAL DEPARTMENT.

WAR OFFICE, LONDON.

SCHEDULE OF QUALIFICATIONS NECESSARY FOR CANDIDATES DESIROUS OF OBTAINING COMMISSIONS IN THE ARMY MEDICAL STAFF, WITH THE CONDITIONS OF SERVICE.

APPOINTMENT.

1. Every candidate for a commission in the Army Medical Staff must be 21 years and not over 28 years of age at the date of commencement of the competitive examination. He must produce an extract from the register of his birth, or, in default, a declaration, made before a magistrate by one of his parents or guardians, giving his exact age. He must also produce a recommendation from some person of standing in society—not a member of his own family—to the effect that he is of regular and steady habits, and likely in *every* respect to prove creditable to the Department if a commission be granted; and a certificate of moral character from the parochial clergyman, if possible.

2. He must possess two diplomas or licences, recognised by the General Medical Council, one to practise Medicine and the other Surgery, and must be registered under the Medical Act in force in the United Kingdom at the time of his appointment. A candidate, however, who holds a single diploma from the Society of Apothecaries, obtained under the conditions of the Act of 1886, will be deemed to possess the double qualification required.

2A. Every candidate for a commission in the Medical Staff of the Army must produce, in addition to the documents specified in paragraphs 1 and 2—

(1.) A certificate of having discharged the duties of a medical clinical clerk during 6 months, and of a surgical dresser during another period of 6 months, of which, in each case, not less than three months must have been spent in the wards of a hospital.

(2.) A certificate of having attended a course of instruction during not less than 3 months at an Ophthalmic Hospital, or the Ophthalmic Department of a general hospital, which course shall include instruction in the errors of refraction.

3. The candidate must sign a declaration upon honour that both his parents are of unmixed European blood, and that he labours under no mental or constitutional disease, or hereditary tendency thereto, nor any imperfection or disability that can interfere with the efficient discharge of the duties of a medical officer in any climate: also that he does not hold, and has never held, any commission or appointment in the public services.

4. His physical fitness will be determined by a Board of Medical Officers, who are required to certify that his vision is sufficiently good to enable him to pass the tests laid down by Regulations. The Board must also certify that he is free from organic or other disease, and from constitutional weakness, or other disability of any kind likely to unfit him for military service in any climate.

Certificates of age, registration of diplomas, etc., and of character, must accompany the declaration when signed and returned.

5. A public and open competition will be held twice in the year for the admission of qualified candidates as probationers. The number of appointments so competed for will be not less than half of the number of vacancies which shall have arisen in the last completed half-year ending on the 30th June or 31st December. It will be competent for the Secretary of State for War to fill up the remaining number from such qualified candidates as may be proposed by the governing bodies of Public Schools of Medicine in the United Kingdom or in the Colonies as he may think proper. Every candidate so proposed must be certified by the governing body proposing him to be duly qualified according to a standard laid down by the Secretary of State, and shall be approved by the Director-General of the Army Medical Department.

The Secretary of State reserves the right of rejecting any candidate who may show a deficiency in his general education, as evinced by bad spelling or composition.

An entrance fee of £1 is required from each candidate admitted to the competition, and is payable at the conclusion of his physical examination, if pronounced fit.

No candidate will be allowed to compete on more than two occasions.

6. The Secretary of State for War will from time to time fix the order of precedence and the proportion in which the several Schools of Medicine shall be offered the nomination of candidates.

7. A Surgeon on probation shall be required to pass through such course at the Army Medical School as the Secretary of State shall decide, and after passing a qualifying examination in the military medical subjects taught there, and satisfying the Director-General that he possesses the necessary skill, knowledge, and character for permanent appointment to the Army Medical Staff, he shall be commissioned as Surgeon-Lieutenant.

The Surgeons on probation who pass out of the Army Medical School at one qualifying examination will take precedence among each other as Surgeon-Lieutenants, as follows:—(*a.*) Those appointed on nomination according to their date of joining on probation. (*b.*) Those appointed by competition according to the last day of the competitive examination, and in order of merit, as determined by the combined results of the competitive and qualifying examinations, with priority over any joining under paragraph (*a*) on the last day of the competitive examination. Their commissions will bear the date of the day of their passing out of the Army Medical School.

EXAMINATIONS.

1. Candidates will be examined by the Examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows:—*a.* Anatomy and Physiology, 1000; *b.* Surgery, 1000; *c.* Medicine, including Therapeutics and the Diseases of Women and Children, 1000; *d.* Chemistry and Pharmacy, and a practical knowledge of drugs, 1000. [*N.B.*—The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of Medical and Surgical patients at the bedside. The examination in Chemistry will be limited to the elements of the science, and to its application to medicine, pharmacy, and practical hygiene.] No candidate shall be considered eligible for the Medical Staff who shall not have obtained at least *one-third* of the marks obtainable in each of the above *compulsory subjects.*

2. Voluntary subjects for examination.—Candidates may be examined in the following voluntary subjects, for which the maximum number of marks obtainable will be—French and German (150 each), 300; Natural Sciences, 300. A number less than one-third of the marks obtainable in each of these *voluntary subjects* will not be allowed to count in favour of the candidate who has qualified in the *compulsory subjects.* The knowledge of Modern Languages being considered of great importance, all intending competitors are urged to qualify in French and German. The Natural Sciences will include Comparative Anatomy, Zoology, Natural Philosophy, Physical Geography, and Botany, with special reference to Materia Medica.

The appointments announced for competition will be filled up from the list of qualified candidates arranged in the order of merit, as finally determined by the total number of marks each has obtained in both the compulsory and voluntary subjects.

After passing this examination, every successful candidate will be required to attend one course of practical instruction at the Army Medical School as a Surgeon on probation in—(1) Hygiene; (2) Clinical and Military Medicine; (3) Clinical and Military Surgery; (4) Pathology of Diseases and Injuries incident to Military Service.

All Surgeons on probation will be required to conform to such rules of discipline as the Senate may from time to time enact, and provide themselves with uniform, viz., the regulation undress and mess uniform of a surgeon-lieutenant, including the serge jacket, but without the sword, sword-belt, dress trousers, and badge of rank.

They will be required to attend the Medical Staff Mess at Netley, and to conform to the Rules and Regulations thereof.

Rank and Pay.

The ranks and daily rates of pay (exclusive of allowances) of the officers of the Army Medical Staff are as follows:—Surgeon-Major-General, £2, 15s. Surgeon-Colonel, £2. Brigade-Surgeon Lieutenant-Colonel, £1, 10s.; after five years in the rank, £1, 13s. Surgeon-Lieutenant-Colonel, £1; after twenty years' service, £1, 5s.; after twenty-five years' service, £1, 7s. 6d. Surgeon-Major or Surgeon-Lieutenant-Colonel, £1; after fifteen years' service, £1, 2s. 6d. Surgeon-Captain or Surgeon-Lieutenant, £200 a year; after five years' service, £250; after ten years' service, 15s. daily. Surgeon on probation, 8s.

INDIAN MEDICAL SERVICE.

REGULATIONS FOR THE EXAMINATION OF CANDIDATES FOR ADMISSION TO HER MAJESTY'S INDIAN MEDICAL SERVICE.

(Subject to any alteration that may be determined on.)

1. *Limits of Age.*—All natural-born subjects of Her Majesty, between 21 and 28 years of age at the date of the examination, and of sound bodily health, may be candidates. They may be married or unmarried. They must possess a Diploma or Diplomas entitling them under the Medical Acts to practise both Medicine and Surgery in Great Britain and Ireland.

2. *Declaration to be submitted.*—They must subscribe and send in to the Military Secretary, India Office, Westminster, *so as to reach that address at least a fortnight before the date fixed for the Examination,* a declaration according to a prescribed form.

3. This declaration must be accompanied by the following documents:—

a. Proof of age, either by Registrar-General's certificate, or, where such certificate is unattainable, by the candidate's own statutory declaration, form of which can be obtained at the India Office, supported, if required by the Secretary of State, by such evidence as he may consider satisfactory. A certificate of baptism which does not afford proof of age will be useless.

b. A recommendation from some person of standing in society—not a member of his own family—to the effect that he is of regular and steady habits, and likely in every respect to prove creditable to the service if admitted; and a certificate of moral character from a magistrate, or a minister of the religious denomination to which the candidate belongs.

c. A certificate of registration, under the Medical Acts, of the degrees, diplomas, and licences possessed by the candidate.

4. *Physical Examination.*—The physical fitness of each candidate will be determined previous to examination by a Board of Medical Officers, who are required to certify that his vision is sufficiently good to enable him to perform any surgical operation without the aid of glasses. A moderate degree of myopia will not be considered a disqualification, provided it does not necessitate the use of glasses during the performance of operations, and that no organic disease of the eyes exists.[1]

Every candidate must also be free from all other organic disease and from constitutional weakness, or other disability likely to unfit him for military service in India.

5. *Subjects for Examination.*—On producing the foregoing qualifications,[2] the candidate will be examined by the Examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows:—

	Marks.
a. Anatomy and Physiology, ...	1000
b. Surgery, ...	1000
c. Medicine, including Therapeutics, the Diseases of Women and Children, ...	1000
d. Chemistry and Pharmacy, and a practical knowledge of Drugs,	1000

(The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of medical and surgical patients at the bedside.)

The examination in Chemistry will be limited to the elements of the science, and to its application to medicine, pharmacy, and practical hygiene.

No candidate shall be considered eligible who shall not have obtained at least *one-third* of the marks obtainable in each of the above *compulsory subjects.*

6. *Voluntary Subjects.*—Candidates may be examined in the following voluntary subjects, for which the maximum number of marks obtainable will be:—

	Marks.
French, German, and Hindustani (150 each), ...	450
Natural Sciences, ...	300

The Natural Sciences will include Comparative Anatomy, Zoology, Natural Philosophy, Physical Geography, and Botany, with special reference to Materia Medica.

A number less than one-third of the marks obtainable in any of these *voluntary subjects* will not be allowed to count in favour of a candidate who has qualified in the *compulsory subjects.*

The knowledge of modern languages being considered of great importance, all intending competitors are urged to qualify in French and German.

Candidates presenting themselves for examination in Hindustani are recommended to study some recognised text-book, such as the annotated edition of the "Taubat-un-Nasuk," which is the text used by candidates for the Indian Civil Service.

7. The appointments announced for competition will be filled up from the

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[1] Further particulars as to the standard of eyesight will be found in the pamphlet by Sir J. Fayrer, M.D., K.C.S.I., etc., entitled *Regulations as to Defects of Vision, etc.*, published by Messrs J. & A. Churchill, 11 New Burlington Street, London, W.

[2] Candidates who pass the Medical Board Examination will be required to pay a fee of £1 before being permitted to compete.

list of qualified candidates arranged in order of merit, as finally determined by the total number of marks each has obtained in both the compulsory and voluntary subjects.

The Examiners in London will prepare a list in order of merit, with the marks affixed in the different subjects, to be transmitted to the Director-General and communicated to the Professors of the Army Medical School. If any candidate is found to be deficient in any particular subject, this shall be stated, in order that he may receive special instruction on the point at Netley.

8. *Course at Netley.*—After passing this examination the successful candidates will be required to attend one entire course of practical instruction at the Army Medical School in—

(1.) Hygiene.
(2.) Clinical and Military Medicine.
(3.) Clinical and Military Surgery.
(4.) Pathology of Diseases and Injuries incidental to Military Service.

These courses are to be of not less than four months' duration; but candidates who have already gone through a course at Netley as candidates for the Army Medical Service may, if thought desirable, be exempted from attending the School a second time.

9. *Pay and Uniform while at Netley.*—During the period of residence at the Army Medical School, each candidate will receive an allowance of 8s. per diem with quarters, or, when quarters are not provided, with the usual fuel and light allowances of a subaltern, to cover all costs of maintenance; and he will be required to provide himself with uniform (viz., the regulation undress uniform of a Surgeon-Lieutenant of the British Service, but without the sword).

10. All candidates will be required to conform to such rules of discipline as the Senate may from time to time enact.

11. *Examination at Netley.*—At the conclusion of the course, candidates will be required to pass an examination on the subjects taught in the School. The examination will be conducted by the Professors of the School.

The Director-General, or any Medical Officer deputed by him, may be present and take part in the examination. If the candidate give satisfactory evidence of being qualified for the practical duties of an Army Medical Officer, he will be eligible for a Commission as Surgeon-Lieutenant.

12. *Position on List, how determined.*—The position of the candidates on the list of Surgeon-Lieutenants will be determined by the combined results of the preliminary and of the final examinations, and, so far as the requirements of the service will permit, they will have the choice of Presidency in India according to their position in that list.

13. No candidate will be permitted to compete more than twice.

Examinations for admission to the Service usually take place twice in the year,—*i.e.*, in February and August.

MEMORANDUM REGARDING THE POSITION OF OFFICERS TO BE APPOINTED TO HER MAJESTY'S INDIAN MEDICAL SERVICE.

Passage to India.—Officers on appointment will, if possible, be provided with passage to India by troop-ship; but when troop-ship accommodation is not available, passage at the public expense will be provided by steamer, or a passage allowance will be granted, if preferred. A charge for messing during the voyage will be made at the rate of 2s. a day. This payment will not include the cost of liquors, which will be charged for as extras.

All Officers who shall neglect or refuse to proceed to India under the orders of the Secretary of State for India within two months from the date of leaving Netley, will be considered as having forfeited their appointments, unless special circumstances shall justify a departure from this regulation.

Pay previous to Arrival in India.—The rate of pay drawn by Surgeon-

Lieutenants from the date of passing the final examination at the Army Medical School until arrival in India will be 10s. a day.

Pay at the above rate will be issued in this country up to the date of embarkation, and an advance of two months' pay at the same rate will also be made prior to embarkation.

Grades and Precedence.—The grades of Officers in the Indian Medical Service are seven in number, viz.:—1. Surgeon-Major-General. 2. Surgeon-Colonel. 3. Brigade-Surgeon-Lieutenant-Colonel. 4. Surgeon-Lieutenant-Colonel. 5. Surgeon-Major. 6. Surgeon-Captain. 7. Surgeon-Lieutenant. These ranks carry precedence and generally other advantages attaching to the rank indicated by the military portion of the title.

Pay and Allowances when in India.—Officers appointed to the Indian Medical Service will receive pay in India according to the following scale when not holding an appointment carrying higher pay:—

Rank.	Years' Service.	Pay and Allowances per Mensem.		
		R.	A.	P.
Brigade-Surgeon-Lieut.-Colonel and Surg.-Lieutenant-Colonel	25	888	12	0
Surgeon-Lieut.-Colonel	20	852	3	7
Surgeon-Major . .	15	677	6	11
" . .	12	640	14	6
Surgeon-Captain . .	10	451	14	5*
" . .	6	433	10	2*
" . .	5	335	12	2*
Surgeon-Captain and Surg.-Lieutenant	under 5	317	8	0*

* When not receiving any staff allowance.

On first appointment they will only come into receipt of Indian pay and allowances from the date of their arrival in India.

The monthly salaries of officers holding the principal administrative appointments and substantive military charges of the Indian Medical Service receive, at present, the following consolidated salaries:—Surgeon-Major-General, Bengal, Rs. 2700; Madras, Rs. 2500; Bombay, Rs. 2500; Surgeon-Colonel, from Rs. 2250 to Rs. 1800; Brigade-Surgeon-Lieutenant-Colonel or Surgeon-Lieutenant-Colonel, of twenty years' service and upwards, in substantive charge of a Native regiment, Rs. 1000, with Rs. 90 horse allowance in Cavalry regiments; Surgeon-Major, under twenty years' service, in substantive charge of a Native regiment, Rs. 800, with Rs. 90 horse allowance in Cavalry regiments; Surgeon-Captain, above five years' full-pay service, in substantive charge of a Native regiment, Rs. 600, with Rs. 60 horse allowance in Cavalry regiments; Surgeon-Captain or Surgeon-Lieutenant, under five years' full-pay service, in substantive charge of a Native regiment, Rs. 450, with Rs. 60 horse allowance in Cavalry regiments. The salaries of other substantive medical appointments in the Civil and Military Departments are consolidated, and vary from Rs. 1800 to Rs. 400 per mensem. Qualified officers of the Medical Service are also eligible for appointments in the Assay Department. The salaries of these appointments are from Rs. 600 to Rs. 2250 per mensem. Officers are required to perform two years' regimental duty in India before they can be considered eligible for civil employment.

Retiring Pensions and Half-Pay.—Officers of the Indian Medical Service will be allowed to retire on the following scale of pension, on completion of the required periods of service:—After thirty years' service for pension

£700; after twenty-five years' service for pension, £500; after twenty years' service for pension, £365; after seventeen years' service for pension, £292. Time of service for pension will reckon from date of first commission. A Surgeon-Major-General, after five years' active employment in India in that appointment, will be entitled to retire upon a pension of £350 per annum, in addition to that to which he may be entitled under the above scale. A Surgeon-Colonel will, after five years' active employment in India in that appointment, be entitled to retire upon a pension of £250 per annum, in addition to the pension to which he may be entitled under the above scale.

A Surgeon-Major-General or Surgeon-Colonel who has completed his term of service and has reverted to British pay, may reside in Europe, at the same time qualifying for higher pension.

With a view to maintain the efficiency of the service, all Officers of the rank of Brigade-Surgeon-Lieutenant-Colonel, Surgeon-Lieutenant-Colonel, and Surgeon-Major shall be placed on the Retired List when they shall have attained the age of fifty-five years, and all Surgeon-Major-Generals and Surgeon-Colonels when they shall have attained the age of sixty years. In any special case, where it would appear to be for the good of the service that the Officer should continue in employment, he may be so continued, subject in each case to the sanction of the Secretary of State for India in Council.

Officers hereafter admitted to the Indian Medical Service will, after retirement on pension before completing thirty years' service, be liable to recall to military duty, in case of any great emergency arising, up to 55 years of age.

Wound Pensions.—Officers are entitled to the same allowances on account of wounds and injuries received in action as are granted to combatant Officers of Her Majesty's Indian Military Forces holding the corresponding military rank.

Family Pensions.—The widows and families of Officers are also entitled to pensions from the Indian Service Family Pension Fund, to which all Officers must, as a condition of their appointment, subscribe from the date of their arrival in India.

NAVY MEDICAL DEPARTMENT.

Admiralty, Northumberland Avenue, London, W.C.

REGULATIONS FOR ENTRY OF CANDIDATES FOR COMMISSIONS IN THE MEDICAL DEPARTMENT OF THE ROYAL NAVY.

1. Every candidate for admission into the Medical Department of the Royal Navy must be not under 21 nor over 28 years of age on the day of the commencement of the competitive examination. He must produce an extract from the register of the date of his birth; or, in default, a declaration made before a magistrate, from one of his parents or other near relative, stating the date of birth. He must also produce a certificate of moral character up to date, and a recommendation signed by a clergyman or magistrate to whom he has been for some years personally known, or by the president or senior professor of the college at which he was educated.

2. He must be registered, under the Medical Act in force, as qualified to practise Medicine and Surgery in Great Britain and Ireland.

3. He must declare that he is a British subject, the son of parents of unmixed European blood; that he labours under no mental or constitutional disease or weakness, or any other imperfection or disability which may interfere with the most efficient discharge of the duties of a medical officer in any climate; and whether he holds or has held any commission or appointment in the public services.

He must also declare his readiness to engage for general service at home or abroad as required.

He must be free from organic or other disease, and his physical fitness will be determined by a Board of Medical Officers, who are to certify that his vision comes up to the required standard, which will be ascertained by the use of Snellen's test types.

The certificates of registration, character, and birth must accompany the declaration, which is to be filled up and returned as soon as possible, addressed as above.

4. Candidates will be examined by the Examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows:—Anatomy and Physiology (1000 marks); Surgery (1000 marks); Medicine, including the Diseases of Women and Children (1000 marks); Chemistry and Materia Medica, and a practical knowledge of Drugs (1000 marks). (The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of Surgical Apparatus, and the examination of Medical and Surgical patients at the bedside. The examination in Chemistry will be limited to the elements of the Science, and to its application to Medicine, Pharmacy, and Practical Hygiene; and the examination in Materia Medica will include a knowledge of the physiological actions and therapeutical uses of Drugs.)

No candidate shall be considered eligible who shall not have obtained at least *one-third* of the maximum marks in each of the above *compulsory subjects.*

5. Candidates may be examined in the following voluntary subjects, for which the maximum number of marks obtainable will be:—French and German (150 each), 300 marks; Biology, Physics, and Physical Geography (100 each), 300 marks. A number less than one-third of the marks obtainable in each of these *voluntary subjects* will not be allowed to count in favour of the candidate who has qualified in the *compulsory subjects.*

The knowledge of modern languages being considered of great importance, all intending competitors are urged to qualify in French and German.

The Natural Sciences will include Biology, Physics, and Physical Geography.

6. The appointments announced for competition will be filled up from the list of qualified candidates arranged in the order of merit as finally determined by the total number of marks each has obtained in both the compulsory and voluntary subjects.

7. Successful candidates, immediately after passing the examination, will receive Commissions as Surgeons in the Royal Navy, and will undergo a course of practical instruction in Naval Hygiene, etc., at Haslar Hospital.

8. A fee of £1 will have to be paid by each candidate to entitle him to take part in the competition.

The full and half-pay per day of Naval Medical Officers is in accordance with the following scale:—FULL-PAY: Surgeon—On entry, 11s. 6d.; after 4 years' full-pay service, 13s. 6d.; after 8 ditto, 15s. 6d. Staff Surgeon—On promotion, £1, 1s.; after 4 years' full-pay service in rank, £1, 4s. Fleet Surgeon—On promotion, £1, 7s.; after 4 years' full-pay service in rank, £1, 10s.; after 8 ditto, £1, 13s. Deputy Inspector General, £2, 2s. Inspector General, £2, 15s. On first appointment to the service, medical officers will receive full pay from date of appointment, but subject to the provisions of Art. 1342, clause 2, of the Queen's Regulations, 1893. HALF-PAY: Surgeon—Under 2 years' full-pay service, 6s.; after 2 years' full-pay service, 7s.; after 4 ditto, 8s.; after 6 ditto, 9s.; after 8 ditto, 10s.; after 10 ditto, 11s. Staff Surgeon—On promotion, 12s.; after two years' full-pay service in rank, 13s.; after 4 ditto, 14s.; after 6 ditto, 15s. Fleet Surgeon—On promotion, 17s.; after two years' full-pay service in rank, 18s.; after 4 ditto, 19s.; after 6 ditto, £1. Deputy Inspector General—On promotion, £1, 5s.; after 2 years' full-pay service in rank, £1, 7s.; after 4 ditto, £1, 9s. Inspector General, £1, 18s.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

Treatment of Cancer.—Fabre Domergue (*Presse Médicale*, July 16, 1894) says that in cancer, whatever the primary cause may be, the cells comprising the tumour divide in an abnormal direction. He thinks that if any means could be found by which the direction of cell division could be changed, we might apply this to influence the growth of cancer. D'Arsonval and R. Dubois observed colonies of bacteria which grew longer in the direction of a magnetic current in the circuit of which they were placed. Verworn placed a drop of water containing protozoa between galvanic poles, and found that these microbes grew with their longest axis parallel to the current. Herturg has succeeded in altering the method of cell division by simple mechanical means (pressure). Fabre Domergue proposes, therefore, a method of treating malignant tumours based on these experiments, and suggests that an electric current be applied to the tumours in a direction so as to make the cells divide and grow in a direction away from the patient's body, the line of the current being perpendicular to the surface affected by the neoplasm.—*British Medical Journal*, July 28, 1894.

Pyoktanin in Visceral Cancer.—Maibaum of Dorpat (*Medit-zïna*, No. 7, 1894) has come to the conclusion that, when employed in cases of malignant disease of internal organs, pyoktanin decidedly arrests the disintegration of these growths, improves digestion, and on the whole has a beneficial action on a system suffering from cancerous cachexia. He relates three cases of advanced carcinoma of the stomach, in which the drug was administered in 1 gr. doses thrice daily (either internally, in pills after meals, or, if not well tolerated, in the shape of rectal suppositories). In all three patients a striking amelioration was rapidly seen; nausea, vomiting, eructations, heartburn, and epigastric pain subsided, the appetite and sleep returned, and the general strength and bodily weight increased.—*British Medical Journal*, July 21, 1894.

Serum Treatment of Anthrax.—Emmerich (*Münich. med. Woch.*, July 10, 1894) gives some account of his researches into this subject along with Most, Scholl, and Isuboi. The author showed some years ago that anthrax bacilli in the tissues gave evidence of complete breaking up and destruction eleven hours after the injections of the erysipelas streptococcus. The bacillus of Friedländer and the B. pyocaneus were subsequently proved to have a similar, but less marked action. The author first details a case in which a rabbit suffering from severe anthrax was cured by the injection of a virulent culture of the erysipelas streptococcus. Experiments are then related which were made with the micro-organism from a case of facial erysipelas. It was obtained in pure culture and inoculated into rabbits. The blood serum, freed by filtration from the streptococcus erysipelatus, was then used for purposes of treatment. Three rabbits were injected with this serum; one four, and eleven and a half hours respectively, after being inoculated with anthrax. Two recovered completely, and the third, pregnant, lived twenty-four hours longer than the control animal. This serum treatment must be continued during five days. The serum of sheep's blood, prepared in a similar fashion, is even more efficient. Two experiments are recorded in which rabbits infected with anthrax were so treated with complete success, the control animals dying rapidly. The author concludes with the hope that this treatment may be successfully adopted in cases of severe intestinal and pulmonary anthrax in man.—*British Medical Journal*, July 28, 1894.

CRANBERRY JUICE IN CHOLERA.—G. T. Goriansky (*Vratch*, No. 6, 1894) has found that juice expressed from raw cranberries (*fructus oxycocci palustris*), and given freely, pure or diluted with an equal part of water, is an excellent means of relieving thirst and vomiting in Asiatic cholera. The patients take the acid and somewhat astringent beverage most readily. As the author's observations in fifty cases have shown, in a large number of patients in whom ice and narcotics fail to make the slightest impression on sickness, the subsequent administration of cranberry juice in small but frequently repeated doses rapidly checks both vomiting and nausea. The author lays stress on the fact that the harmless juice has a powerful destructive action on the cholera vibrio,—being, in fact, much superior in this respect to lime water, carbolized lime water, birch tar, Raptchevsky's pixal, and a 5 per cent. solution of carbolic acid.—*British Medical Journal*, July 1, 1894.

CHLORAL HYDRATE IN HÆMOPTYSIS.—J. Pal (*Centralblatt f. die gesammte Therapie*, July 1894), in the first place, refers to the two extremely old measures advocated in cases of hæmoptyses, namely, bleeding and ligaturing of the extremities, the latter procedure having been recommended by Hippocrates. The object is to relieve the venous circulation while permitting the arterial flow. Several times at the onset of a hæmoptysis the author thus ligatured the four extremities below the axillæ and above the knees respectively, in this way obtaining good results. However, their application can only be extended over about half an hour, and unless the bandages are very carefully and gradually loosened, there is a possibility of the thrombus in the lung being detached during the increased venous flow. The author therefore tried chloral hydrate, which he expected to produce the same therapeutical result without the attendant mechanical disadvantages. Fifteen patients were thus treated, the heart in each having previously been declared sound. The drug was injected per rectum in doses of from 15 to 25 grains, and an effect was always produced within a half to three-quarters of an hour. Several times repeated doses were given, and as a prophylactic the drug also seemed to be valuable. Several cases are described, and further research in this direction is recommended.—*British Medical Journal*, July 14, 1894.

Ergot for Night Sweats in Phthisis.—Goldendach (*Deut. med. Woch.*, June 28, 1894) thinks that the night sweats of consumptives are not simply due to fever, and that their real cause has not yet been fully explained. Many remedies have been recommended for them—quinine, acetate of lead, atropine, hyoscin, brandy, rubbing the body before sleep, or using the powder composed of starch, talc, and salicylic acid. Most of these Goldendach has tried and found wanting. On considering the part probably played by the vasomotor nerves, he determined to try the effect of ergot against night sweats, and in most cases found the result very satisfactory. He usually gives one or two 5-grain doses of powdered ergot before bedtime, and the cases are few in which this remedy is found quite useless. He has, moreover, never seen any harm result. Lately he has modified his method by injecting the ergot subcutaneously in the form of a diluted extract.—*British Medical Journal*, July 7, 1894.

OCCASIONAL MEDICAL PERISCOPE.

By A. Lockhart Gillespie, M.D., F.R.C.P.E.

Transitory Albuminuria.—T. Hwass, in a *Bihang till Nordiskt Medicinskt Arkiv*, has published a paper entitled "Studier öfver Transitorisk Albuminuri hos till utseendet friska personer" (Studies of Transitory Albuminuria in Persons apparently Healthy). Examination of the urine of 559 men in an artillery regiment passed before each principal meal resulted in the discovery of albumin in 15·4 per cent. of the number. The amount of albumin was always small, ranging from below ·01 to ·09 per cent.; it appeared irregularly, more frequently between 12 noon and 1 P.M. and at 6 P.M. than in the morning; exercise had no effect on it, and no relation could be traced between the degree of acidity or the amount of uric acid and the quantity of the albumin. Hyaline casts were found in 65 of the cases, 17 of whom had no trace of albumin, while granular casts appeared in 57 cases, 15 without albumin.

Paul Tiemann (*New York Medical Journal*, March 17, 1894), in an interesting though chiefly historical paper on the same subject, states that out of 2000 examinations which he has made, the majority of which were on adult males, he has found albuminuria present in 9 per cent. Out of this total 186 were below 21 years of age (few, if any, being females), and in these the percentage rose to 27·4. Examination of the urine of 104 boys, apparently not included in the last series, showed the presence of albumin in 29·8 per cent. In only two cases could the albuminuria have been due to urethritis. Casts were found in 9 out of the 104, but were only abundant in 5. The urine tested was passed between 7 and 8.30 P.M.

F. Kraus (*Wiener med. Presse*, 1893, Nos. 48–50) comes to the conclusion that intermittent albuminuria is not of danger to life, and sooner or later disappears without developing into ordinary Bright's disease. He found casts in the urine of all his cases.

NUCLEO-ALBUMINURIA.—In an original article contributed to the *Centralblatt für Innere Medicin*, April 28, 1894, Drs Pichler and Vogt increase our knowledge very considerably concerning the presence of nucleo-albumins in the urine. It is seldom present in any quantity in ordinary nephritis, but appears in the urine after direct injury to connective tissue and other cells anywhere in the body, but especially if in the kidneys, and in larger quantities, though more rarely, if secretions, such as the bile, which contain nucleo-albumins, happen to enter the blood stream. Physiological albuminuria (so-called) is often really a nucleo-albuminuria. Proceeding with their experiments, the authors find that the injection of a neutral solution of casein in the blood is followed by a true but slight nucleo-albuminuria. Want of blood in the legs of a dog, produced by clamping the crural arteries for half an hour, is followed by nucleo-albuminuria, in some cases accompanied by a slight albuminuria. This they think is due to partial breaking down of cell substance owing to want of oxygen. Interruption of the blood stream of the kidney also causes a well-marked nucleo-albuminuria. Compression of the thorax or limbs, as pointed out before by Schreiber, brings on, in a few cases, the same phenomenon. Further notes on this condition will be found as under:—Obermayer, *Centralblatt für Klin. Medicin*, 1892, No. 1; Runeberg, *Deutsches Archiv für Klin. Medicin*, Bd. xxiii. p. 68; Lecorché-Talamon, *Traité de l'albuminurie;* Löwnberg, *Skandinavisches Archiv für Physiologie*, Bd. iii.; Schreiber, *Archiv für experimentelle Pathologie*, Bd. xix. p. 237, Bd. xx. p. 85; and Kraus, *Wiener medic. Presse*, 1893, Nos. 48–53.

SULPHONAL HÆMATOPORPHYRINURIA. — Stein (*Deutsche Med. Wochenschrift*, 1894, No. 10) found in the kidneys of a patient who died in coma after long treatment with sulphonal, and who had during life presented signs of hæmatoporphyrinuria and albuminuria, necrosis of the tubules of the kidney, especially of the convoluted tubules, with other microscopic appearances common to toxic nephritis.

SERUM—THERAPY AND IMMUNITY.—This subject continues to excite much interest and investigation. H. Buchner (*Berliner Klin. Wochenschrift*, 1894, No. 4) argues that the antitoxin of the serum is not a healing agent, but only an "*immunisirendes serum.*" A mixture of tetanus poison and tetanus antitoxin which is not fatal to white mice will kill guinea-pigs. The two substances do not act directly on one another, but through their action on the body. As to the nature of the antitoxin, Buchner regards it as being very closely allied in composition to the poison, and to be a toxalbumin.

With regard to tetanus, Finotti (*Wiener Klin. Wochenschrift*, 1893, No. 7) has reported the third case of that disease cured by injection of Tizzoni's antitoxin. The patient, a girl of 19 years, was wounded in the neck with a splinter of wood. Severe tetanus supervened, but treatment with the antitoxin cured the symptoms. Fourteen days after extraction of the splinter it was found possible to induce death by tetanus in an animal by inoculation from the wood.

Günther, in the *Deutsche Med. Wochenschrift*, 1893, No. 46, gives a good *résumé* of the subject. A. Pawlowsky and L. Buchstat, in the same journal (1893, No. 27), give details of some experiments in connexion with cholera. Taking frogs as the type of cold-blooded animals, they found that they were cured and rendered immune from the effects of the cholera bacilli by injection of the blood-serum of immune dogs, and that also the blood-serum of these frogs acted in a similar manner on other frogs, although the transudation from the lymph sac failed to give such immunity. They also found that, although hens and ducks were not killed by injection of the cholera bacillus, pigeons were, unless the blood-serum of an immune dog had been injected. As to the actual agent, the authors were unable to ascertain anything further than that the globulins and albumins of an immune dog contain an antitoxin, but that they have alone much less effect than when dissolved in their natural solution, the blood-serum. However, they assert that the serum of an immune dog contains only ·34 per cent. of globulin, while that of a normal dog contains ·988 per cent.

E. Centanni and Bruschettini ("L'Antitoxina della febbre batterica," *Riforma Med.*, 1893, Nov. 7) come to certain conclusions with regard to the antitoxin of bacterial fever. 1. That the symptoms of septic fever are due to a general intoxication of the system with pyrotoxin, which is not identical with any of the bacterial poisons as yet separated out. 2. That this poison—*i.e.*, pyrotoxin—is common to all bacteria, without reference to their pathological properties. 3. That serum from a dog immunized against infection with influenza bacilli proves both preventive and curative against pyrotoxin.

EXTERNAL USE OF GUAIACOL IN HIGH TEMPERATURES.—Da Costa (*The Medical News*, Jan. 27, 1894) reports very favourably on the action of guaiacol, if used externally, for subduing temporarily high temperatures in enteric fever. The method employed was that of painting 30 to 50 drops of the drug on the skin of the abdomen or thigh with a camel-hair brush, and then rubbing it in for 15 minutes. Frequently a very considerable fall of temperature—5 degrees on one occasion—occurred afterwards, and that not too rapidly nor accompanied with any untoward symptoms. In fact, nervous symptoms, if present, seemed to be benefited. Unluckily the smell of the remedy was rather disagreeable and difficult to disguise, though oil of cloves sufficed to do so partially.

Stolzenburg (*Berliner Klin. Wochenschrift*, 1894, No. 5), however, does not recommend the method, which was, by the way, first suggested by Sicolla, as, although the fall of temperature is very marked, the sweating and consequent rigors are very severe, and the influence on the disease is not lasting.

A note on guaiacol "purissimus" will be found in the *Pharmaceutischen Zeitung*, 1894, No. 34, "Ueber Kristallisirtes Guajakol," by Dr S. Winghöffer, in which he states that when absolutely pure it has little taste or smell, and is easily taken by patients. It can be obtained in an absolutely pure condition from a commercial sample by cooling with a mixture of ice and salt, and then separating the crystals which have formed.

SURGICAL PERISCOPE.

By KENNETH M. DOUGLAS, M.D., F.R.C.S. Edin.

NEW TREPHINES.—In the *International Medical Magazine* we have notice taken of two new trephining instruments, which in their conception and general characters are very similar. Mr Crosby Wright of Philadelphia writes a short paper on an apparatus designed by him; it consists of an elbowed handle on which may be fitted various trephines, saws, drills, etc., either so as to work at right angles to the handle, or (by fitting them on at the bend) on the straight principle. The apparatus works with flexible shafts (such as that on a dental drill), and the power used is electricity or a "movable surgical engine." Dr Ayres' instrument is in principle quite the same, but more adapted to present requirements. Dr Keen reports a case in which he used this instrument—one of removal of the Gasserian ganglion for neuralgia,—and claims for it great power, speed, and steadiness of action. In operating for the removal of a portion of the skull with this instrument, a small trephine opening is first made, and the osteotome introduced; the osteotome is a spiral, half an inch long, with three cutting blades, the effectiveness of which "is increased by a spiral screw with 44 threads to the inch cut round the instrument. This device adds twenty-two teeth to the edge of each cutting blade. The individual teeth are so arranged with reference to one another, that the cut made by one tooth is overlapped by that of the one following, while the spiral arrangement of these teeth in connexion with the three spiral grooves makes the burr perfectly self-cleaning, the débris being rapidly thrown out behind." The point of the burr when in use is guarded by a rounded button-like attachment or guard connected with the handpiece, and in the hollow of which the free end of the burr revolves; the dura mater is thus absolutely protected from injury. The same journal abstracts from the *Annals of Surgery* (May 1894), an account of Dr Leonard's (Philadelphia) trephine. This is a less elaborate instrument, worked, as the ordinary trephine is, by the hand, but having on a fixed handle a revolving shaft to which the force is applied through a double raised spiral by means of a sliding handle. By a simple device contained in the sliding handle the shaft is made to rotate only on the upward movement, and there is therefore no reverse motion of the trephine. The single motion of the hand causes three complete revolutions of the cutting edge. The simplicity of the mechanism makes it impossible for the instrument to get out of order, while the construction makes antiseptic cleaning easy.

AMPUTATION OF THE ENTIRE UPPER EXTREMITY (INCLUDING THE SCAPULA AND CLAVICLE) AND OF THE ARM AT THE SHOULDER-JOINT. —Dr Keen contributes a paper on this subject to the *American Journal of the Medical Sciences* (June 1894). Considering first the amputations of the shoulder joint, Dr Keen shows that hæmostasis and asepsis are of the first importance, and that the want of accord as to the best means of preventing hæmorrhage warrants reconsideration of the subject. He therefore discusses the various modes of preventing hæmorrhage at present in vogue, and draws attention again to his method of compressing the subclavian by pad and perineal band. The use of Wyeth's pins Keen regards as the best method, and next to that, compression of the axillary flap by an assistant before the cutting of the vessel. Ligature before division of the vessel is useful in emergencies (case quoted). The mode of application of Wyeth's pins is fully described, and two cases reported in which the method was adopted. When the axilla is invaded by disease so high that Wyeth's pins cannot be used, Delpech's procedure is advocated,—*i.e.*, an incision from the outer one-third of the clavicle to an inch above the inferior border of the great pectoral, division of the lesser pectoral near to its attachment to the coracoid, passage of the fingers along the serratus magnus to the subscapular, and so to the vessels, which are drawn outwards and ligatured. The advantages claimed by Keen for the method are,—wide access given to the axilla, determination of extent of invasion of axilla, and whether operation is permissible. The incision serves as the inner part of the deltoid incision if amputation be determined on (case reported). With respect to amputation, including removal of scapula and clavicle, Keen regards as by far the preferable method of arresting bleeding, the ligature of the vessels after resection of the middle portion of the clavicle. The steps of the procedure are detailed, and an illustrative case reported. Keen notes that in his case the pectoral branch of the brachial plexus, which Berger describes as easily seen and felt, and as lying obliquely in front of the artery and affording a sufficient guide to it, was not seen. He thinks it best to divide the artery between two ligatures, and then to tie and divide the vein; if the vein hide the artery he would deal with it first. The vessels having been secured, the flaps are formed, making first the anterior incision, and so getting free access to the axilla.

THE RADICAL CURE OF HYDROCELE.—Dr Gavin considers that no simple uncomplicated case should be treated except by injection. The use of iodine he deprecates as inducing pain, sickness, and sometimes fainting. He treats his cases with a solution of equal parts of carbolic acid, alcohol, and glycerine, of which he injects half an ounce, with careful protection of the skin during the process. The injection is practically painless and without unpleasant effects. —*Boston Medical and Surgical Journal*, March 1, 1894.

Part Fifth.

MEDICAL NEWS.

BRITISH INSTITUTE OF PREVENTIVE MEDICINE.—The trustees of the late Mr Richard Berridge have, with the consent of the Attorney-General, now handed over to the Institute the residue of the legacy, amounting to over £20,000, for the purpose of building and endowing a Laboratory for the chemical and bacteriological examination of water supply, and the investigation of processes of sewage purification. The permanent Laboratory is now in course of erection on the site secured by the Institute at Chelsea, but pending its completion a temporary Laboratory has been fitted up in order that the work may be at once proceeded with. Mr Joseph Lunt, B.Sc., F.C.S., formerly assistant to Sir Henry Roscoe, has been appointed by the Institute to carry on this work under the Directors' supervision. The Institute is now prepared to undertake the bacteriological and chemical examination of any samples of water which may be submitted. In addition to this the Institute is also prepared to undertake the bacteriological or pathological diagnosis of any pathological material. The demand for this kind of work has greatly increased,—so much so, that although Dr Ruffer will still retain charge of this department, a specially trained bacteriologist has been appointed to work under his direction. Particulars may be obtained by writing to the Director at the temporary offices, 101 Great Russell Street, London, W.C.

EMOL-KELEET.—We are much too apt to prosecute our search for the remarkable in far distant lands, and to overlook those which lie at our doors. An apt example of this is afforded by the substance named Emol-Keleet, a natural deposit which possesses qualities the extent of which are yet a long way from being thoroughly investigated. On the estate of Lord Rollo and Dunning, a nobleman who so admirably maintains the reputation of an ancient national title, there has been found an extensive accumulation of a peculiar earth, which, when refined, has properties peculiarly its own. It is then an absolutely impalpable powder, quite amorphous under high powers of the microscope, of a delicate flesh tint, soft, yet somewhat adhesive. It has been subtilly compounded in Nature's laboratory of steatite, alumina, traces of calcium salts, and deftly coloured by the addition of a minute trace of ferrous oxide. When mixed with water, it softens it if hard, renders it still more pleasant for washing if soft; indeed, if rubbed on the hands and then these dipped in warm water, it forms a species of natural soap. It is thus particularly adapted for employment as a dusting powder, and can be so used as a simple protective, as an anti-pruritic in slightly irritable conditions of the skin, to prevent chafing or scalding, or as a harmless cosmetic, for which purpose its colour renders it suitable. As a tooth powder it is perhaps one of the best and safest, while at the same time most efficient, since there are in it no sharp crystalline particles, as in charcoal or occasionally in chalk, to cut into the enamel. Used with water as a paste, it painlessly soddens epidermic overgrowths, thus permitting these to be easily scraped away. Messrs Burroughs, Wellcome, & Co., always on the alert to seize on anything which promises to aid suffering humanity, have taken Emol-Keleet up, and this fact alone is a pretty fair guarantee for the value of the material. We are confident that ere long other uses will be found for this, which may strictly be called a product of Scottish ground; and having ourselves extensively tested it, we can most warmly recommend it to the attention of our readers.

MESSRS HOLDEN BROTHERS have sent us a pair of their patent Toe-Post Shoes for the treatment of bunions and bent and crooked toes and other deformities arising from the eversion of the great toe, and consequent projection and partial dislocation of it at its metatarso-phalangeal joint. The shoes are shaped so as to suit Nature's form of the foot, and a special stall is made for the reception of the great toe. Of course the wearing of such a boot implies that the patient's stocking or sock is also furnished with a special "finger," as in a glove, for each toe, or, at least, for the great toe. The idea is a well known one, and seems to be carefully carried out, but much will depend on the accuracy and skill with which the shoe is *fitted* to each individual case. Ready-made articles will not be likely to be of much service.

BOIL IT DOWN.

Just a word to those good doctors
  Who are meditating deep
On a paper they're preparing,
  Full of thoughts too good to keep—
    Boil it down.

'Tis not words, but facts, we're wanting;
  Therefore prune and pare with pains
Your scholastic evolution
  Till an essence pure remains—
    Boil it down.

. . . . . .

Welcome every fresh advancement,
  Hail each new discovered fact,
But in writing a description
  That attention will attract—
    Boil it down.

And remember that discussions
  Are of interest all agree;
So your paper should invite them;
  Make it short as well may be—
    Boil it down.

—Dr WARD in the *Journal of the American Medical Association.*

PUBLICATIONS RECEIVED.

A FELLOW OF ROYAL COLLEGE OF PHYSICIANS, and PHYLLIS BROWNE,—Diet and Cookery for Common Ailments. Cassell & Co., Limited, Lond., 1894.

Budapest Souvenir. Dedicated by the Direction of the Franz Josef Aperient Water Spring in Budapest to the Members of the VIII. International Congress of Hygiene and Demography, 1894.

Sir **C. A. CAMERON**, M.D.,—Report on the State of Public Health in the City of Dublin for 1893. Dollard, Printinghouse, Dublin, 1894.

W. WATSON CHEYNE, M.B. Ed., etc.,—The Treatment of Wounds, Ulcers, and Abscesses. Young J. Pentland, Edin. and Lond., 1894.

DON LEMON,—Everybody's Pocket Cyclopædia. London and Universal Bank, Limited, London, S.W.

CHARLES MERCIER, M.B.,—Lunacy Law for Medical Men. J. & A. Churchill, Lond., 1894.

PHILIP E. MUSKETT,—Prescribing and Treatment in the Diseases of Infants and Children. Third Edition. Young J. Pentland, Edin. and Lond., 1894.

Prof. **HENRY D. NOYES**, A.M., M.D.,—A Text-Book on Diseases of the Eye. Second Edition. H. K. Lewis, Lond., 1894.

Dr **E. RÉGIS**,—A Practical Manual of Mental Medicine. Second Edition. Translated by H. M. Bannister, A.M., M.D. Press of American Journal of Insanity, Attica, N.Y. 1894.

HUNTER ROBB, M.D.,—Aseptic Surgical Technique. J. B. Lippincott Co., Philadelphia, 1894.

ARTHUR EDMUND TANNER,—Physical Culture for Men, Women, and Children. Simpkin, Marshall, Hamilton, Kent, & Co., Lond., 1894.

The British Guiana Medical Annual and Hospital Reports. Demerara, 1894.

The Johns Hopkins Hospital Reports, Vol. IV., Nos. 4, 5. Report in Neurology, II. The Johns Hopkins Press, Baltimore, 1894.

Twenty-second Annual Report of the Local Government Board. Supplement containing the Report of the Medical Officers for 1892-93.

Transactions of the Ninety-sixth Annual Session of the Medical and Chirurgical Faculty of the State of Maryland, 1894.

EDWARD T. WITHINGTON, M.A., M.B. Oxon.,—Medical History from the Earliest Times. The Scientific Press, Limited, Lond., 1894.

Part First.

ORIGINAL COMMUNICATIONS.

I.—ON THE METHOD OF STUDYING A NATURAL SCIENCE SUCH AS PHYSIOLOGY. AN INTRODUCTORY LECTURE TO THE COURSE OF PHYSIOLOGY IN THE UNIVERSITY OF EDINBURGH, delivered in October 1894.

By Professor RUTHERFORD, M.D., F.R.S.S. Lond. & Edin.

WE are assembled here for the study of Physiology, and it will be of service if, at the outset, I indicate the method of study that will best aid you in its pursuit.

It is our duty to help you to obtain an accurate knowledge of the main facts and theories of physiological science; to assist you in obtaining a knowledge of physiological facts, as far as possible, by your own observation; to enable you to understand the methods that have led to physiological discovery; to induce you to criticise physiological theories, and thereby cultivate a habit of independent thought; to enable you to perceive how, in some cases, we can pass from that which is known to a conception of what is probable in regions that are unknown, and so stimulate you to a scientific use of the imagination, tending towards the formation of ideas that may, in the future, serve to open up new fields of inquiry and lead to discovery.

Such is a brief outline of what must always be the programme of a real education in any science whose data have—like those of physiology—been arrived at by observation and experiment. You naturally desire to know the best methods by which you can gain such knowledge of natural science, and undergo such mental training as will enable you to think for yourselves on scientific subjects, and feel that you can place reliance on your own conclusions. You will find considerable variation of opinion in different schools regarding the methods to be adopted, and you will find that these different opinions chiefly relate to the value of systematic courses of lectures as compared with tutorial teaching, reading, and practical study. Having been a teacher of science for now thirty years, and having studied in several schools in different countries, I hope I may have earned some title to pronounce an opinion on the method of scientific education.

The primary requirement of the student is the creation of an intellectual atmosphere, in which his mind can work efficiently and with comparative ease. The mere attendance at a school or university goes far to create such atmosphere. But a general atmosphere is not enough; there must be the creation of a special atmosphere in every subject of study. There is no method by which this special atmosphere can be so readily and so fully created as by a systematic course of lectures on the subject of study. It is the duty of a lecturer to condense the subject he teaches, and to present it to the student in strict logical order, so that he may be led step by step from the simple to the complex, by, so to speak, a natural process of development. The order of statement is all-important. The most difficult subjects can be rendered intelligible if the order of statement be carefully considered, so that the mind shall be led by easy gradation and logical sequence.

An inexperienced student may imagine that if the lectures were printed verbatim, and privately read, their perusal would enable him to learn the subject quite as well as attendance at the lecture. But the result of the two methods can never be the same. The mental atmosphere created by reading a difficult subject is always comparatively dull, and in young minds it is apt to become repulsive. Although reading is, of course, an essential adjuvant to a course of oral instruction, it can never adequately supply its place. Silent words, however well arranged to convey lucid ideas, can never arrest the attention and stimulate the mind as spoken words are capable of doing. Who has not felt how great a difference there is between reading Shakespeare's plays and seeing them acted on the stage? Even when they are simply read aloud by a single reader who understands the significance of each passage, and gives suitable emphasis and modulation, how much more the mind is stimulated by such living recital than by perusal of the silent words. We must recollect that words are but symbols of speech; only when spoken do they become endowed with their fullest life, and penetrate readily the inmost recess of the mind. No silent page can give the lights and shades of expression thrown upon any subject by the varying emphasis and inflection which they naturally receive from the speaker. Even in scientific description, words receive new meaning when spoke by one who understands the subject and desires to convey its significance to others.

But the mere fact of assembling together for the purpose of being collectively addressed is itself of value. Man's sympathetic nature renders him gregarious. He is happiest when he feels himself in sympathy with others. He naturally draws towards those whose mental features and pursuits are similar to his own, so that he may enjoy a congenial atmosphere. In young minds this desire for sympathy is conspicuous. Therefore it is that the sympathetic influence pervading a class-room can induce mental effort in a manner congenial, because harmonious with innate feeling, and in a manner differing from the stimulating influence of rivalry that comes powerfully into play at the same time. The desire for sympathy and love of generous rivalry fan the young mind into the mental glow we call enthusiasm, that is so great a help in study; it lightens labour; it carries the mind up difficult paths to high attainment; and therefore it is our duty to do what we can to foster a spirit so helpful.

Physiology is an experimental science, and must be taught experimentally. In former times, when courses of lectures were given by physicians busily engaged in practice, the lectures were scarcely at all illustrated by experiment, because the lecturer seldom had a laboratory and a suitable collection of apparatus; and he had no time to prepare elaborate experiments. Happily nowadays all that is changed, and far greater care is taken to teach physiology in such a manner that the student's interest may be awakened and his mind really educated in the science. Experimental illustration of lectures is essential in order that the student may realise the methods by which physiological knowledge has been arrived at. The nature and arrangement of the apparatus, the steps of the experiment, the difficulties encountered, the devices by which they are overcome, the inferences to be drawn, and the fallacies to be guarded against,—all stimulate him to feel an interest in the subject and furnish him with a *real* knowledge of an experimental science. It may perhaps be as well to say that the great majority of the experiments required for the illustration of physiological lectures are not experiments on living animals. Most of them are experiments of a physico-chemical nature. Many are experiments on living *tissues*, but only a small number consist of experiments on living animals, and they are performed without producing pain.

Some of you will ask if you should read up a subject in a text-book before hearing it lectured upon? To such a question I give the unhesitating answer—first hear the lecture and then read. The lecture easily creates the mental atmosphere you require to enable you to read with full advantage. When you read the subject after listening to a lecture upon it you will find that you can recall much of what you saw and heard, and that you can grasp and assimilate the subject far more readily. But if the readiest way to learn a science is first to hear it lectured upon and then to study it by reading piece by piece, it must be to your advantage that the course of lectures should cover the whole subject. That is the principle adopted in the Scottish Universities, and I am convinced it is the method best fitted to help the student.

You will ask, What shall we read? To that I answer without hesitation—first read your notes of the lecture, and then if you so desire, read a text-book; but first read your notes, for they will recall the lecture and keep you in the same line of thought until you have mastered what they contain. The mention of *notes* awakens the vexed question of note-taking. Those who can write shorthand have no difficulty. If I had known the value of shorthand to every medical man—and, indeed, to every one who has much writing to do—I would certainly have learned it in student days, and I would advise every one of you to learn it while you are still young enough to acquire it readily. But those who can only write in longhand can take sufficient notes if helped by a syllabus containing some short notes of the lectures. A syllabus is essential. It shows in perspective the arrangement of the subject, and is a great help to the teacher as well as to the student. I would recommend all to take notes, not merely because of the condensed information they will contain, but because note-taking greatly helps to fix the attention on the subject. All minds, but especially young minds, find it difficult to concentrate the attention and keep it steadily fixed on the subject under discussion. In scientific exposition it is essential that the attention of the listener shall be continuously applied; otherwise the thread is broken and its gaps cannot be supplied by any effort of imagination. Scientific exposition does not consist in statements strung together in irregular order, but in continuity of idea.

In reading scientific subjects I would recommend you always to read *very slowly* and deliberately, so that you may allow due time for the production of a sufficiently deep impression on the memory. In this age of haste we all tend to read too rapidly. The mind tends to be hurried along the lines by the "frenzied current of the eyes," with the result that the mental impressions are so confused and mixed that the memory cannot accurately recall them. You see this illustrated every day by the manner in which people read a newspaper. They diligently scan its columns for half an hour or more; they may read so much in a short time that the rapidly succeeding impressions efface each other, and you may discover that they are unable to give you any definite and accurate account of any topic they have been reading. I am certain that the first thing many students have to learn is how to read with advantage. When the student of anatomy begins with a bone in one hand and a book in the other in which every feature of the bone is described, it may seem easy for him to read with advantage; but it is not so. Some days or even weeks may elapse ere he discovers how vividly his attention must be fixed on the subject, and how carefully he must seek to verify every sentence in the book with the object it describes. Reading with a view to learn anything of importance must always be slow enough to allow time for thought. By far the most important part of study is the thought by which it is accompanied. Thinking much on what we learn by the senses is real study. Mental digestion and assimilation are impossible without thought. The mere accumulation of facts undigested by thought is the process termed cramming. The knowledge so gained is evanescent and of little permanent value, because it is unreasoned knowledge. Scientific education may be defined in a single sentence as the acquirement of reasoned knowledge. No man can learn physiology unless he thinks much and deeply. No flippant superficial mind need hope to master even its main principles. At every step mental insight is necessary. Therefore it is that the thinker wins the highest place in the study of physiology, as he eventually does in the practice of medicine.

But before I pursue this topic further, I may allude to the tutorial method of teaching.

The tutoral method is extremely useful as a supplement to some systematic courses of instruction. It is essential when anatomical objects or physiological apparatus have to be demonstrated to small numbers at a time. It is valuable for the revisal by question and answer of the instruction given in systematic lectures; but when it is used as a substitute for systematic courses of lectures, as is the case to so large an extent in the older English universities, the result is not to the permanent advantage of the student. We must bear in mind that to pass an examination is not the ultimate aim of education. The rapid storage of the student's mind with numerous facts and imperfectly discussed theories is not the education that will render him a reliable and independent thinker in after-life. The tutorial method usually tends to degenerate into what is termed "grinding." The method is hostile to that sustained exposition which is the distinctive feature of the lecture, that lifts it far above tutorial instruction as a method for expanding the mind and educating it in the method of scientific exposition and study. Many a student eventually becomes an expositor of scientific and other subjects; and he is educated for such duties by listening to sustained expositions in a manner which he cannot be by the tutorial method. I hope the day will never come when the systematic courses of lectures given in Scottish universities are to be curtailed and replaced by tutorial instruction. I believe that if such should ever come to pass, it will be because Professors have failed to keep their lectures in touch with the immediate as well as the ultimate requirements of the student. It is our duty to teach in such a manner that you be enabled with a fair amount of honest work on your part to pass your examinations; that is your immediate requirement; and as members of a university we are bound so to teach that your minds may be trained in scientific modes of thought, so that you may be enabled to rightly use the knowledge you have gained; that is your ultimate and highest requirement for the successful practice of medicine.

Let me now turn youı attention to the value of practical studies.

Shortly summarised, their value consists in this,—that they bring the student into direct contact with Nature; they cultivate his power of accurate observation, and they train him in manipulative dexterity.

All natural science springs from the observation of Nature. We can learn much by hearing and reading systematic expositions of the facts and principles arrived at by research. But it is at the same time necessary to take the student to the sources of such knowledge. The student of every natural science must be brought as directly as possible into contact with Nature, so that he may study phenomena directly by the use of his own senses. By such method of instruction the student is not treated as a mere absorber of the statements made in books and lectures, but as an independent observer requiring proof of the statements made, desiring to examine the structures described, to test the properties of things, and acquire the power of accurately observing and manipulating.

This practical study of Nature is attractive to all, but especially so to young minds. At any age—but especially in youth—the mind is apt to grow weary of abstract statements, and to lose touch with a subject so treated. The mind is not satisfied by mere descriptions of phenomena, but desires to realise them by direct inspection. This method of studying Nature by direct contact with it inspires a degree of confidence not otherwise attainable. The mind feels the support of solid ground and can advance with reliable step. When the student by this method criticises and tests anew the observations made by others, they become to him living impressions vividly imprinted on his mind by a natural method. But while the student soon perceives that the method of practical study is the surest way to acquire definite and lasting knowledge of scientific facts, he is at the same time, because of his eagerness to learn the concrete facts, apt to forget that a great and leading object of practical studies is to quicken and increase the power of making accurate and independent observations.

I need hardly remind you how greatly men differ in their power of observation. If you listen to travellers giving an account of the impressions they have received in the countries and cities they have visited, you find how much they vary in the use they have made of their eyes. Some have allowed little to escape their notice, others have only vague impressions of what they have witnessed. Some men have such power of concentration that they are able to fix their attention firmly on an object until they have thoroughly scrutinised it, and have obtained a deep and abiding impression regarding it. Such men apply their minds thoroughly to the subject on hand. They proceed methodically; they avoid flitting rapidly from one object to another, knowing that by such butterfly method an abiding impression is unattainable. On the other hand, there are many who have no firm grasp; their eyes are open, but they fail to see; their impressions are vague; they hesitate to describe them, because they cannot exactly recall them.

Every session we notice that when a number of students are examining similar objects with the microscope and are asked to describe what they see, they vary greatly in the acuteness and accuracy of observation. The cause of the difference is almost entirely mental; most men's eyes are good enough; it is the acuteness of their mental vision that varies so much.

Anatomy has always taken the lead in practical study. No man can sufficiently learn anatomy, and no one can become a surgeon unless he dissect the body to acquire a thorough knowledge of the relative positions of its parts, and the manipulative dexterity required to deftly use a scalpel and forceps.

In Chemistry there has long been a practical class, but in my student days no one gave us any systematic instruction in the practical chemistry which every medical man requires daily in his professional work. The late Professor Bennett began the teaching of Practical Physiology, and practical instruction in Physical Diagnosis in the Medical Wards of the Infirmary, but it has been only within the last twenty years that the example he set has been imitated in all the other departments of medical study. I can remember the day when men with fossilized minds sneered at the extension of practical classes as a new burden and tax on the student. Such blind leaders of the blind were ignorant of the methods by which young minds are to be rightly led into the domain of natural science. They could not perceive that the physician is a naturalist who must be intimately acquainted with Nature, knowing how to skilfully observe her manifold phases, and how to rightly influence them by various preventive and curative means.

Every one feels that the student of medicine in these times has far greater opportunities for learning the science and art of his profession than he had some twenty years ago. But amidst the multiplied opportunities now available for acquiring the habit of accurate observation and dexterous manipulation, I wish we could find reason for believing that students generally are as anxious to acquire the habit of thought necessary in medicine as they are to learn a multitude of facts for the day of their examination. We see all around us how rapid is the advance of medical science, and how impossible it is for any one mind to master all the minute facts of any one department. In view of the increasing complexity of medical science, which the student now strives to learn in five years, it becomes more and more necessary that in professional examinations we should be careful not to lead the candidate to suppose that his mind must be crammed with the ephemeral knowledge of a multitude of minute details. The time spent in striving to master too many details lessens the time required for thought, and tends to make the student a crammer instead of a thinker. What the student requires is a knowledge of the important facts and theories of each science, but his knowledge of these must be *sufficient*, and *accurate*, and *well-reasoned*. He must show that he thoroughly understands the subject. And further, in view of this rapid advance, it becomes the more necessary that the teacher shall, in his course of lectures and practical study, become more and more *selective*, so that he may sufficiently guide the student in the application of his powers to the scientific topics of primary importance. No mind, young or old, should strive to become an encyclopædia of knowledge. Life is too short for such effort; and, assuredly, it can never be accomplished in five short years.

But while moderation in study and in examination requirement is now, and will, in the future, become more and more imperative, I would ask the student to remember that his brain, like his muscles, will not grow larger and more powerful unless it is urged to strong effort. An easy-going study will never fit you for the battle of professional life. No physical athlete could excel unless he voluntarily undergo long training in muscular efforts that lead to increase of his strength and endurance. No man can attack the many difficult problems of medicine unless he voluntarily submit to severe mental discipline and compel himself to forego pleasure, and live laborious days of strong effort to learn the chief facts of medical science, and train his mind in the necessary habit of thought. We have had good reason to conclude that in recent years a good many students of medicine have desired to be spared as much as possible the labour of study. They desire short cuts to knowledge, and to be spared the trouble of thinking for themselves. This undesirable mental attitude may serve immediate purposes, but it will never make a man a successful practitioner of medicine.

This leads me to return to the Importance of Thoughtful Study.

When you visit the Infirmary you find the physicians and surgeons daily called upon to examine the varied and complicated phenomena of disease. You will be struck by the infinite pains with which they minutely inquire into every fact that can throw light on the cause, and on the nature and extent of the disease. They carefully assemble all the evidence they are able to obtain; pronounce their opinion on the relative significance of the various symptoms, and resolve on the method of treatment. You will discover that what is termed "medical instinct" really consists in the possession of accurate knowledge; the power of making accurate observations; the faculty of acute insight, and of rightly estimating the relative significance of symptoms, so that a reliable decision may be arrived at.

The study of physiology is of special value in enabling the mind to acquire the habit of thought necessary in medicine. Chemistry, physics, and anatomy are each of great value in training the mind in scientific method and habit of thought, but it is the science that treats of the properties and functions of the tissues and organs of the body that unites the qualities of thought required in the pursuit of medicine. The value of physiology as a subject of study lies not merely in learning important facts regarding the actions of the several parts of the bodily mechanism, but in the necessity for continuous thought on problems requiring keen insight and cautious judgment. The study of physiology is rendered difficult by the complicated nature of the bodily mechanism, and the hidden obscurity that veils the innermost workings of all vital processes.

The circulation of the blood is a fact so commonly known that the unthinking mind is apt to take its proof for granted. But few physiological processes have had so much thought devoted to them by a single mind as the motion of the blood received from Harvey. The student requires not merely to know that the blood moves in a circle, but he requires to ponder the reasons that led Harvey to prove that the blood *must* be regarded as moving in a circle, although he had no microscope to show him the blood flowing from the arteries to the veins through the capillaries. He requires to repeat Harvey's process of thought before he can realise how much we owe not only to his accurate observation, but still more to his power of inductive thought.

The movements of the heart, and the manner in which they are affected by various conditions; the manner of the blood-flow in arteries, capillaries, and veins; the several conditions that cause variation in its distribution to different organs,—these and other phenomena connected with this single province of physiology compel the student to exercise the kind of thought he will always require in medicine.

But physiological study implies not merely an understanding of its established laws, but also translation of thought from what is proved to what is probable. That implies a scientific use of the imagination,—that is to say, it implies that the imagined process shall seem probable, because of analogy with some process already known, or because of the necessity for framing the hypothesis to afford reasonable explanation of the facts.

Do not misapprehend the term *scientific use of imagination.* Science is not founded on imagination, but on facts proved by observation and experiment.

An unscientific use of the imagination developed the tangled thicket of weeds that so long hindered the growth of science. The old doctrine of Galen that the heart and arteries forcibly expand like a pair of bellows for the purpose of drawing blood into them, just as the expansion of the chest draws air into the lungs, is one of many examples of an unscientific use of the imagination. There is no real analogy between the expansion of the chest and the expansion of the heart; nor is there any analogy between the expansion of the heart and that of the arteries. Harvey's accurate observation and experiment entirely abolished Galen's unscientific hypothesis.

The physicist resorts to a scientific use of the imagination when he supposes all space filled with an ethereal medium. He has proved that light must be regarded as an undulatory motion. He has proved that it is transmitted through space devoid of ordinary matter, such as a complete vacuum, and he supposes that its undulations must be transmitted by a perfectly elastic imponderable medium. The existence of the medium is probable, because it is impossible to conceive the transmission of undulation without a medium to undulate.

The chemist also has recourse to a scientific use of the imagination. His molecules and atoms are creations of the imagination rendered necessary for the explanation of chemical phenomena. They serve so well to offer reasonable explanation of such phenomena that no one doubts their existence.

The physiologist is also obliged to use his imagination to carry him into the unknown regions of vital processes. His microscope cannot reveal the minutest structure of protoplasm; his chemical processes are insufficient to show the chemical actions that lie at the root of life; he cannot explain why the activity of the protoplasm of a liver cell is so different from that of a nerve cell. To in some measure meet the difficulty, he imagines that the molecular structure and chemical composition of the different cells is to be regarded as the cause of the difference in their vital manifestations. It is a mere hypothesis that serves to fill the void of the unknown acceptably, because it is harmonious with speculations to which the chemist and the physicist have been compelled to resort.

Or again, take as illustration of the scientific use of the imagination the celebrated theory of colour sensation advanced by Thomas Young. Convinced as he was so strongly that light is an undulatory motion, he imagined it impossible that the terminals of the optic nerve in the retina could respond to all the different frequencies of undulation contained in the visible rays of light. He imagined it more reasonable to suppose that the apparent continuity of the spectrum as seen by a normal eye may be explained by supposing that the optic terminals contain only three sets of particles, two of them specially thrown into vibration by the undulations near the ends of the spectrum, and the third specially by intermediate undulations. He proposed to reduce primary colour sensations to three in number—red, yellow, and blue, or red, green, and violet, and to derive other colour sensations from their admixture. He expressed the opinion that his suggestion "simplified the theory of colours, and might, therefore, be adopted with advantage until found inconsistent with any of the phenomena." In these few words taken from Young's writings you find a definition of the limits that must bound a scientific use of imagination. A hypothesis may be adopted with advantage if it serves to furnish an explanation of obscure facts, but must be abandoned if the advance of knowledge proves it to be "inconsistent with any of the phenomena." Few efforts of scientific imagination have induced so much research by the physicist and physiologist to prove or disprove the adequacy of such a hypothesis as Young's speculation regarding colour vision.

Scientific imagination strives to penetrate the unknown, not vaguely, as in a confused dream, but by circumspectly searching for some opening to admit light, and always returning to the citadel of ascertained truth to test the reasonableness of its speculations.

Scientific imagination has always been the parent of *invention*, and it has also been, in the great majority of cases, the pioneer of *discovery*. Pasteur's method of treating anthrax and hydrophobia was the brilliant result of a powerful scientific imagination penetrating the unknown, and eventually discovering that its preconceptions had been well founded.

But, perhaps, some of you will say, Have we really anything to do with imagination? We are come here to learn what is already known, and not for the purpose of attempting to make discoveries. I tell you that you cannot learn physiology aright unless you have imagination enough to carry you from its visible processes to the invisible activities of molecular mechanisms in which the mysteries of life lie hid. And who of you can tell whether or not you will, on some future day, make additions to scientific knowledge. No year passes without discoveries being made by graduates who were students the other day. You had better not live in the hope of stumbling on some important discovery; for new truths are seldom arrived at in that way. The first condition necessary is the formation of the *idea* that is to initiate and direct the research. Discoveries are comparatively rare, not merely because it is difficult to prosecute research, but far more because originality of idea is so exceptional. None of you can tell what original ideas may arise in the mind in the course of your ordinary study. One cannot summon up such ideas by command, but we can, all of us, strive to render our studies as thoughtful as possible. That is the secret of the signal success achieved by some in student days, and afterwards in medical practice.

Critical discussion of the theories of medical science is the most powerful incentive to thoughtful study. It compels a man to make up his mind, and formulate definite opinions as the result of his own independent judgment. The bane of physiology and of medicine in former times was, that most men had not the courage to think for themselves. They bowed to the authority of Galen as if he had been an infallible demi-god, just as men in the non-scientific world of our time implicitly follow certain leaders, because they have not the courage to think for themselves and avow their opinions.

The whole range of medical science abounds with topics suitable for discussion. I would advise every student to find some congenial friend who will daily discuss with him the problems that arise in the course of study. The daily sharpening of the iron by the friction of mind with mind is one of the most valuable features of such collective life as exists in a University.

But private discussion with a friend is not sufficient to evoke the highest efforts of critical thought; discussion in the assembly is necessary. Let me advise every student who is entering on his third year of study to join a Society for the discussion of medical topics. So far as I know, no other Medical School in the world has a Student's Society at all approaching our Royal Medical in the many advantages it offers. The most thoughtful students have generally been found there. I have heard many a man express his gratitude to that Society for the extent to which it had contributed to his success in after life; and I have also seen how much some men have lost by not having in student days had their critical faculty developed by joining such a Society. I have not unfrequently heard a student say that he had no time to join a debating society, because it takes too much time from the work required for examinations. Many are under that idea, because they have not by experience realised that a single evening spent in discussion each week, so brightens and sharpens the intellect, that better mental work is done on all the other days; and they are also unaware how much greater effect would be given to their study by increasing their insight and critical power.

I trust the thoughts I have placed before you on this our opening day may prove serviceable in helping you to pursue your studies throughout the Session, in such a manner as will bring credit to us all and ultimate success to you.

II.—ON THE DIAGNOSIS OF TUBERCULAR JOINT DISEASE.

By A. G. Miller, F.R.C.S.E., Surgeon to, and Lecturer on Clinical Surgery at, the Edinburgh Royal Infirmary.

I HAVE selected the above as the subject of this paper, because, in my experience as a hospital surgeon, I have not unfrequently seen mistakes made in the diagnosis of tubercular joint disease. We see a very great number of tubercular joint affections at the Edinburgh Royal Infirmary, and from the statistics of the hospital reports, I gather that the proportion of tubercular to all other joint affections is from three-fourths to four-fifths.[1]

In preparing the following paper I have drawn almost entirely from my own experience. Consequently, my views may not coincide with those of other surgeons. I give them, however, to the profession for what they are worth, hoping that they may be of use to some.

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[1] In this calculation I do not include spine or sacro-iliac cases,—only the joints of the extremities.

The affections that, in my experience, are liable to be confounded with chronic tubercular joint disease are—The hæmophilic joint; the hysterical joint; sarcoma; chronic traumatic synovitis; syphilitic synovitis; chronic rheumatoid arthritis; tubercular epiphysitis; tubercular bursitis; and tubercular tenosynovitis. Before dealing with the differential diagnosis of chronic joint tuberculosis from these various affections, I would first point out what I believe to be the leading and most reliable characteristics of chronic tuberculosis of the joints of the extremities. These are mainly six:—

1. Mode of onset—history of slight injury, or none.
2. Appearance of joint—pale, ovoid, smooth, etc.
3. Temperature of joint slightly raised.
4. Absence of pain, except on movement.
5. Limitation of movement by muscular spasm.
6. Atrophy of muscles, especially of the extensors.

1. *The Mode of Onset.*—The patients who mostly come to us with tubercular joints (children and adolescents) are very liable to have injuries, and they are so accustomed to these that they think nothing of them, but immediately forget them. Older patients are very apt to remember, or at any rate to classify their diseases by the treatment to which they have been subjected on their account. An injury, consequently, that has received no treatment is generally forgotten. There may be no history, therefore, of an injury, and the onset is said to have been *insidious.*

On the other hand, we often get a history of a slight injury which caused a slight amount of swelling, hardly sufficient to oblige the patient to remain in bed—or perhaps only for a short time. The patient goes about, limps a little, or is stiff and constrained in some movements (if the upper extremity is affected), and perhaps cries if roughly handled. The joint never gets well. The swelling comes and goes, but never quite disappears. Movement becomes more restricted and painful. Up to this point inflammation is not feared by the parents, because the joint is not *apparently* inflamed. Sometimes, however, a bonesetter is consulted, on the supposition that the "joint is out." He wrenches the limb and makes things much worse, and then orthodox advice is sought. Every hospital surgeon knows that this is a very common history which I have been trying to sketch.

I believe, therefore, that all these cases originate in a slight injury (I never saw one which originated in a severe one), which is not treated and forgotten, or is treated in such a way as not to bring about a perfect recovery; that is to say, the joint is never properly rested.

2. *Appearance of Joint.*—The pale and rounded or ovoid appearance of the joint is, of course, well known, having originated the ancient title of "tumor albus." The skin looks wonderfully

natural. There is, however, a smoothness, due to the obliteration of the normal folds and furrows, which is peculiar. There may be some unusually distinct superficial veins, and a number of long silky hairs,—if the patient be old enough.

The normal prominences of bone, which give the distinctive external features to each joint, are smoothed down or obliterated by the swelling which gives the characteristic rounded or ovoid appearance to the tubercular joint. This condition is sometimes made out properly only on careful comparison of the affected joint with the normal one. The smooth rounded appearance is explained by the slow increase, and œdematous character of the swelling. That is to say, the swelling is an œdema, and as it occurs very slowly, it has time to find accommodation in the hollows and convenient slack places in and around the joint, where there are no restraining attachments of ligaments and tendons.

3. *Temperature of Joint.*—This is usually slightly, but distinctly, raised as compared with the corresponding healthy joint. This rise of temperature is always present, and denotes the existence of an inflammatory process in the joint. Now, it must be remembered that this inflammatory process is not a slight one, though external appearances and subjective symptoms may tempt us to suppose so. I have learned, and I teach, that the amount of disease present is always in excess of the apparent symptoms. When one cuts into a tubercular joint, one is often surprised to find the amount of disease and destruction that is revealed.

The general temperature of the patient may be raised also, but sometimes it is normal, or even subnormal. If raised, it follows a somewhat irregular course, and the highest point is not registered in the evening, as in other inflammatory affections, but often in the afternoon.[1]

4 and 5.—The fourth and fifth symptoms I will take together, because they are mutually dependent and explanatory. These two conditions are—*Absence of pain except on movement,* and *limitation of movement.* I might perhaps divide this very characteristic condition of strumous joints into three:—1, *Apparent absence of pain;* 2, *pain on attempts at passive movement;* and 3, *limitation of movement on the part of the patient.* This double or triple (as you take it) condition of a joint I consider very characteristic of strumous disease.

We all know how patients can walk into hospital (limping perhaps more or less) with a hip, or knee, or ankle joint which is distinctly diseased, and perhaps has been so for some months. Again, a child may come to us who holds an arm in a rigid manner, who nurses it carefully, and who is very suspicious of its being handled; and yet the parents will say that it does not complain of it except when it is touched.

We know how surprised students often are when they are told that such joints are tubercular, and require to be excised; and how still more surprised and terrified the parents are when told that an operation is necessary.

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[1] For this fact I am indebted to my friend Dr Brakenridge.

The absence of pain is what deceives. And it is ignorance that a joint may be far gone with strumous disease and yet apparently painless (except on movement), that leads to the destruction of so many joints; for the early stage of the disease is overlooked or not diagnosed, and the only period during which perfect recovery can be obtained, by proper treatment, is lost. Pain on movement is not a symptom peculiar to strumous joints, but absence of pain except on movement, associated with more or less fixation of the joint, is, I think, peculiarly characteristic of tubercular disease.

The absence of pain is due to fixation of the joint and to the slight degree of inflammation present. The latter is subacute and chronic. At the same time, though slight in degree it is extensive, as I have already said, because it usually involves, sooner or later, all the tissues constituting the joint—bone, cartilage, periosteum, synovial membrane, ligaments. The condition is *arthritis*,—that is to say, an affection of the joint as a whole, and not a *synovitis* merely, as it is sometimes designated. This latter peculiarity of strumous disease explains the characteristic pain on movement, for with movement one (or more) of these structures is hurt, and pain results. They cannot all escape. Indeed, they are all more or less hurt by movement. The absence of pain, therefore, is only apparent, being due to the involuntary fixation of the joint by the patient, to prevent the pain that would be caused by movement. The apparent absence of pain and the fixation of the joint have the same explanation, and that is why I have bracketed them together.

That the rigidity of the joint is due to muscular spasm is easily demonstrated in the early stages of the disease (before destruction of tissue and adhesions have taken place) by placing the patient under chloroform, when free movement of the joint is at once obtained.

The explanation of this muscular contraction or spasm is well known—it is reflex. By an impulse sent from the diseased joint to the spinal cord, and a reflected impulse sent to the muscles acting on the affected joint, the latter is fixed or splinted, and painful motion prevented. In this way Nature tries to bring about recovery, and has suggested to surgeons the method of treatment that has hitherto been most successful, viz., immobilization.

The affected joints (hip, knee, elbow) are generally not only fixed, but bent. This is explained by the well-known fact that the flexors are more powerful than the extensors; and the joint is usually more comfortable when bent than when straight, probably from the same cause.[2]

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[2] This rigidity or fixation is not confined to tubercular joints. We see an example of it in "*hallux rigidus*." There the great toe is splinted on account of the existence of an arthritis. We see the same rigidity in the spine in early caries.

6. The last symptom which I would refer to as specially characteristic of tubercular joint disease, is *atrophy*. This atrophy has many points worthy of consideration:—

(1.) It affects the whole limb more or less.
(2.) It is greater and more rapid than can be explained by mere want of use.
(3.) It is more marked than in any other joint affection.
(4.) It specially affects certain muscles and groups of muscles; each joint having its peculiarities, which are very constant.

(1.) In strumous joint disease the whole limb atrophies. This is well known, and I need not dwell on it. Witness the shrunken and wasted limbs in hip, knee, shoulder, or elbow disease. There are two points, however, to which I would like to draw attention. The atrophy is not limited to the muscles, but affects the limb as a whole, and in the second place this atrophy of the limb is apt to persist even after recovery of the diseased joint. Of this there are many examples, which must readily occur to the minds of all surgeons. I repeat, the atrophy is of the limb as a whole, muscle and bone alike, and it tends to persist. What is the explanation? I believe that the cause is a reflex contraction of the arteries of the limb, which interferes with nutrition. I have been led to that opinion by observing, when I have had occasion to amputate for tubercular joint disease, that though there may be many active vessels in the neighbourhood of the disease, the main arteries are always very small. I have often observed the latter about half the size one would expect them to be under ordinary circumstances,—in a primary amputation, for instance.

(2.) The atrophy is greater and more rapid than would be caused by mere want of use. This, I think, is now generally admitted and recognised. There are several facts which go to prove this. We have seen, for instance, that when cases present themselves for treatment the limb is still being used to a certain extent; yet there is in such cases always well marked atrophy.

(3.) The atrophy in strumous disease is more marked and rapid than in other joint affections. This statement I cannot prove by statistics; I speak merely from experience. I thoroughly believe this, and more than once a rapid and extreme atrophy has made me suspect tubercle, the diagnosis being subsequently confirmed. Muscular and general atrophy is usual in joint affections; but, I repeat, it is most marked in strumous disease.

(4.) The atrophy specially affects certain muscles and groups of muscles. These are, stated generally, as follows:—Hip, glutei; knee, quadriceps extensor; ankle, extensors; shoulder, scapular muscles; elbow, triceps and biceps; wrist, muscles arising from internal condyle of humerus.

I take these merely as examples. The flattening of the hip and loss of the natal fold on the thigh are well-known signs of hip disease. The wasting of the quadriceps extensor in disease of the knee joint is also familiar. When one examines the thigh in such a case, it is wonderful how little seems to lie between the skin and the femur on the front of the thigh. Then in disease of the shoulder the prominence of the spine of the scapula from the wasting of the supra- and infra-spinati muscles is very evident, as also the prominence of the acromion from wasting of the deltoid.

Pathological Note.

The usually accepted explanation of atrophy is that it is due to a reflex action through the trophic centres in the anterior horns of the spinal cord. But why does the atrophy affect certain muscles earlier and more than others? Hilton[1] has pointed out that the same nerves which supply any joint supply also the muscles acting on that joint. In this way he explains the unconscious fixation of a diseased joint, which always occurs, and to which I have already referred. In the same manner he explains the flexion that usually takes place (knee and elbow) by the greater power of the flexors over the extensors. But he does not explain the atrophy. Ferrier[2] does this by telling us that extensor muscles are always earlier and more quickly atrophied than the flexors, because they are the weaker. "The vitality of the extensor centres and nerves is the first to become exhausted by any condition tending to lower the vitality of the nerve centres and nerves in general."

Charcot[3] has shown that muscular atrophy from disease of a joint is not the same as that from want of use,—the latter being a fatty degeneration, which the former is not. He was of opinion that nerve irritation alone is capable of determining rapid and early atrophy of muscles, and that the diseased joint irritation does so markedly, because its irritation is continuous. He points out also that atrophy started by joint disease is apt to persist and to cause general atrophy of the limb (to which I have already referred). In the *British Medical Journal*[4] there are references to investigations made by German and French observers, who found a simple degeneration in the atrophied muscles connected with joint disease. The muscles "were obviously atrophied, and of a paler colour than those on the other side, and they had lost their firmness and elasticity." The microscope showed "no trace of degeneration," but the "fibres were considerably smaller than they should be." This, it appears to me, points to what I have already suggested in my paper on Bier's Method of treating Tubercular Joints by Congestion, viz., that the reflex action, acting through the trophic centres in the anterior horns of the cord, causes a contraction of the arteries. It seems natural to suppose that diminution in the size and power of a muscle should be due to a diminished blood supply; and if the object, so to speak, of a reflex action is to cause atrophy of a muscle, surely the quickest and surest way would be to shut off the blood supply. Then one must remember that though the atrophy begins in certain muscles, it ultimately extends to the whole limb, and tends to persist.[1]

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[1] *Rest and Pain*, second edition, page 150.

[2] *Lancet*, 12th August 1893, page 386.

[3] *Diseases of Nervous System.*

[4] Epitome, January 24th and July 11th, 1891.

Muscular atrophy cannot be due to muscular spasm in the cases we are considering, because the muscles affected with spasm are not those most atrophied—*e.g.*, in the case of the knee the hamstrings are most contracted and the quadriceps is most atrophied. Again, this theory will not explain the atrophy of a whole limb—muscles, bone, and all.

Another explanation has been offered of the muscular atrophy in tubercular joint disease: for instance, of the deltoid in shoulder and the quadriceps extensor in knee affections, viz., that the tubercle bacilli enter the muscular substance from the subjacent joint and cause a low form of inflammatory process which produces the atrophy. No proof of this has, however, been adduced; indeed, as we have already seen, the atrophy has been proved to be a simple one, unconnected with any degenerative or other change in the substance of the muscles themselves.

At the same time, one must admit that it is very likely that the muscular substance is tubercular in some way, for it has been demonstrated that muscle from tubercular animals, although it may seem perfectly sound and good, is capable of infecting guinea-pigs with tuberculosis.

In what way is the apparently healthy muscle infective? Does it contain spores? Are bacilli derived from the blood and lymph vessels? How do the lower animals get their tuberculosis? Why has muscle tubercle not been observed in man? These are questions that suggest themselves, but cannot, of course, be discussed in this paper.

I now take up the subject of *differential diagnosis*, and this will have been made more easy by the fulness with which I have gone into the diagnostic points of tubercular disease.

I. The first affection I take is *the hæmophilic joint*. The hæmophilic joint is very like the tubercular. There is usually a history of a slight injury. The joint is pale, rounded in outline, and not painful. Flexion, however, may cause pain. There may be some muscular atrophy. The child is delicate-looking, and may have a suspicious family history, some relatives having died of tubercular disease. The diagnostic points on which I would rely are:—1.

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[1] In Holmes' *System of Surgery*, vol. ii. p. 209, several instances are given of muscular atrophy resulting from contraction of bloodvessels from reflex causes and neuralgia; and an instance is given of atrophy of the muscles of the thumb and hand, due to an injury to the ulnar artery.

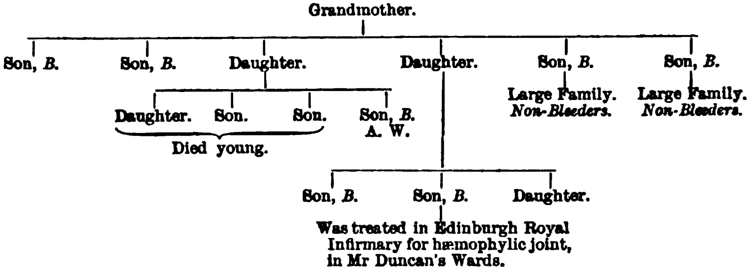
Movement of the joint is fairly good, and is not resisted by muscular reflex, because it is not painful if done gently. 2. Muscular atrophy, if present, is not marked, and does not affect special muscles as in tubercle. 3. Marks of ecchymosis may be present, both recent and ancient. It is quite legitimate in a doubtful case to pinch the child and look next day for an exaggerated ecchymosis, which is sure to occur in a hæmophilic case. 4. The history of previous epistaxis, or bleeding from cuts, is a valuable help. 5. If the joint, or some other, has been affected previously, it will have recovered with perfect restoration of function,—a state of matters that does not occur, in my experience, in tubercular disease. 6. Then there is the family history. Bleeders appearing among the males, but transmitted through the females of the family. 7. Lastly, time will show. In a few days there may be discoloration over the joint from the soaking through of the blood in the joint, and in a few weeks the joint will get perfectly well if it is rested. This, of course, will not occur in a tubercular joint (more the pity).

The Strumous Joint.	*The Hæmophilic Joint.*
1. Slight injury, or none.	1. Injury, often slight.
2. Joint pale, ovoid, slightly warm, boggy (seldom fluctuating; patella fixed in knee case), and synovial membrane thickened (œdematous).	2. Joint pale or slightly discoloured, rounded in outline (shape that of simple synovitis), warm, boggy or fluctuating (in case of knee patella, movable).
3. Limb fixed, movement painful, and resisted by muscles.	3. No fixation or pain on movement if performed gently.
4. Marked muscular atrophy, especially of extensors.	4. Muscular atrophy not a symptom.
5. Presence of tubercular affections elsewhere.	5. Marks of ecchymosis.
6. History of tubercle in family.	6. History of hæmophilia among males of family, transmitted through females. History of former bleedings from cuts; epistaxis, etc.
7. Patient delicate-looking.	7. Patient delicate-looking.
8. Rest will not bring about a cure in a week or two.	8. Rest will cure in a week or two.

In this connexion I would like to record the case of a boy who has been frequently under my care for hæmophilia.

A. W. came under my care first when about 4 years of age. He had an enlarged knee joint, which was diagnosed as white swelling, partly from its appearance and partly from the history of his father having died of phthisis. The joint was treated by rest, and improved somewhat. As there was great restlessness on the part of the patient, and some suspicion of starting of the limb, the actual cautery was applied. This at once demonstrated the true nature of the case, because when the sloughs separated bleeding commenced, and nearly proved fatal. The joint recovered perfectly. Since then the boy (who is now 14 years of age) has frequently been under my care for epistaxis, cut fingers, and effusion into a knee or an elbow joint. When last seen he was perfectly well, not a trace being left of any of his joint affections. His family chart, which is very typical, is appended.

A. W., æt. 14, schoolboy, hæmophylic.


Grandmother.
Son, *B.*
Son, *B.*
Daughter.
Daughter.
Son, *B.*
Son, *B.*
Daughter.
Son.
Son.
Son, *B.*
A. W.
Died young.
Large Family. *Non-Bleeders.*
Large Family. *Non-Bleeders.*
Son, *B.*
Son, *B.*
Daughter.
Was treated in Edinburgh Royal Infirmary for hæmophylic joint, in Mr Duncan's Wards.

II. *The hysterical joint* is sometimes very difficult to diagnose from strumous disease. I have treated several cases in which the hip and knee were affected. Two cases of hysterical hip occurred in ladies, two in boys. The two former got well under massage, counter-irritation, and change of air. The two latter were cured at once by circumcision. Two knee cases were females, one of whom has been under treatment for several years.[1]

In regard to the question of diagnosis, the points I would depend upon are:—1. Numerous and changing painful spots. 2. Want of definiteness and accuracy in symptoms. There is a difficulty in making out what the condition really is, and there is not a true ring in the symptoms. 3. The patient has the peculiar "shifty" look of hysteria, which I cannot describe, but which is generally easily recognised once attention is directed to it. The ovaries may be tender, etc. 4 All symptoms disappear under an anæsthetic, and reappear on the patient recovering consciousness.

The Tubercular Joint.	*The Hysterical Joint.*
1. Joint pale, ovoid, hot, boggy; large veins, hairs, etc.	1. Joint enlarged; nothing definite to be made out.
2. Joint fixed; movement painful.	2. Joint fixed; movement resisted.
3. Pain not a special symptom.	3. Hyperæsthesia; pain at varying points.
4. Marked muscular atrophy, especially of extensors.	4. Limb may be smaller, but there will be subcutaneous fat.
5. History of tubercle, and perhaps presence of tubercle elsewhere.	5. History of nervous complaints. Evidence of hysteria; ovaries sensitive, etc.
6. Disease progressive, or else improving under treatment.	6. Disease stationary, and no improvement from local remedies.
7. Under chloroform distinct evidence of disease.	7. Under chloroform all symptoms disappear.

III. *Sarcoma* of the lower end of the femur I have seen mistaken for tubercular knee joint, and I have seen several cases of advanced tubercular disease of the knee that resembled sarcoma in external appearance. I could imagine the same sort of thing in connexion with the shoulder and other joints. The resemblance is in appearance,—that is to say, it is external and superficial. Both conditions present a swelling in the neighbourhood of the joint, smooth, rounded or ovoid in outline, with engorged superficial veins coursing over it; warm to the touch; soft, elastic, perhaps fluctuating; often especially soft at one point as if pointing. The patient is probably young and delicate-looking, gives a history of an injury followed by a swelling, which enlarged slowly at first, and then more rapidly. There is muscular atrophy of the limb. The resemblance to white swelling is considerable, but on closer investigation we find in the case of a sarcoma that the swelling began on one side (where the injury probably had been), and was small at first and localized. At this time the patient is perfectly healthy. But he begins to show evidences of delicacy and wasting after the swelling has existed for a month or so, and after it has begun to grow more rapidly and to cause pain. We find also that the swelling takes only a month or two instead of several months to grow. Then on examining the part locally we find that the joint is really not involved. Movement is possible (within certain limits) if carefully performed, there being no true splinting of the joint. The swelling is somewhat to one side, and the patella, though lifted up, is usually on one side. There may be pulsation. Atrophy, sometimes considerable, is more general than in tuberculosis.

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[1] This latter case is very interesting, and will appear in *The Hospital* at an early date.

It will be seen that I refer to advanced cases,—*i.e.*, of several months' duration. It is only in such that I have seen difficulty in diagnosis. In early cases there ought to be no difficulty.

White Swelling.	*Sarcoma.*
1. History of slight injury.	1. History of injury.
2. Joint pale, ovoid, warm, boggy; enlarged veins, hairs (if suppuration, fluctuation, pointing).	2. Swelling near joint; smooth, rounded, warm, elastic, large veins; may fluctuate at parts.
3. Limb fixed; movement painful.	3. Healthy joint can be made out.
4. Marked muscular atrophy, especially of extensors.	4. Muscular atrophy general.
5. Tubercular history and tubercle elsewhere.	5. No tubercular history—patient healthy till tumour began to grow.
6. Comparatively slow growth.	6. Comparatively rapid growth.
7. Slight rise of temperature, which is irregular.	7. If rise of temperature it is steady.
	8. Growth commences at one side; may pulsate.

IV. *Chronic Traumatic Synovitis* may be diagnosed from white swelling by—

1. *The History.*—Injury usually pretty severe. Sharp, acute synovitis not completely cured. Family history good.

2. Movement fairly free and not painful, unless there are adhesions.

3. If adhesions, then flexion is painful only when adhesions

are put on stretch. In other words, movement is free and painless up to a certain point.

4. No marked muscular wasting. If present, is general and not special. To put the thing in a nutshell, this is a *synovitis*. The tubercular affection is an *arthritis*.

5. Swelling shape of synovial membrane, with fluctuation (floating patella in case of knee). Thickened synovial membrane may be felt at margin sometimes.

Strumous Arthritis.	*Chronic Traumatic Synovitis.*
1. Slight injury or none.	1. Pretty severe injury.
2. Joint pale, ovoid in outline, slightly warm, boggy, synovial membrane œdematous.	2. Joint pale, swelling shape of synovial membrane, fluctuation, synovial membrane thickened.
3. Limb fixed by muscular spasm.	3. Joint movable, unless adhesions, when movement arrested abruptly at certain point.
4. Marked muscular atrophy, especially of extensors.	4. Muscular atrophy slight and general, not special.
5. Tubercular history and tubercle elsewhere.	5. No tubercular history or manifestation.
6. Slight rise of temperature, of irregular type.	6. Temperature normal.

In this connexion I would like to say a few words on two points:—1, Adhesions; 2, thickened synovial membrane.

1. *Adhesions.*—The diagnosis of these adhesions is usually easy, and they, if present, aid the general diagnosis very much. The diagnostic point is freedom of movement, and painless movement *up to a certain point.* Then come both pain and fixation of the limb by the patient. This is seen best in the knee, and is very characteristic. The knee may be used fairly well in walking, but if an attempt be made to fully flex the joint, acute pain is produced when a certain angle is reached, and the patient at once resists. Sometimes the patient, anticipating the painful stage, resists the flexion before the adhesion-point is reached. This is very different, however, from the general spasm and fixation of the limb, or splinting by muscular contraction, that occurs in tubercular arthritis.

2. *Thickened Synovial Membrane.*—This is most easily made out by pressing on the margin of the synovial membrane. In the knee, for instance, at the upper edge of the pouch above the patella. This thickening differs from the œdema of tubercular disease by being firmer, denser, and more defined. This can be easily understood when we consider that the one is a genuine hypertrophy of the synovial membrane, the other an inflammatory œdema.

V. I shall next consider *syphilitic synovitis*, which I have met with almost solely in the knee joint. This should not be difficult to diagnose from tubercular disease, though it is sometimes difficult to differentiate from simple chronic synovitis and chronic rheumatoid arthritis. The main point of distinction is the history of the case. Previous history of syphilis, no traumatism; not unfrequently bilateral; not giving way to ordinary treatment, but improving under mercury locally, and potassium iodide internally.

Strumous Arthritis.	*Syphilitic Synovitis.*
1. Slight injury.	1. Came on slowly.
2. Joint ovoid and boggy.	2. Joint shape of synovial membrane; fluctuating.
3. Rigid and painful on movement.	3. Painless, movable, but weak.
4. Atrophy marked and special.	4. Atrophy slight and general.
5. May be multiple, but not symmetrical.	5. Sometimes symmetrical.
6. History of tubercle.	6. History of syphilis.
7. Tubercle elsewhere.	7. Traces of syphilis elsewhere.
8. Not materially benefited by mercury and K. I.	8. Benefited by mercury and K. I.
9. Increase of temperature.	9. No increase of temperature.

VI. *Chronic rheumatoid arthritis* may be mistaken for tuberculosis. I think that they are not unfrequently confounded, and I have seen cases in which only animal inoculation could possibly have decided the matter. In advanced cases of both diseases you have involvement and ultimate destruction of all the tissues forming the joint. The synovial membrane is thickened, the cartilage is destroyed, the bone is inflamed, and the ligaments are softened and stretched, permitting lateral movement accompanied with grating. You may have suppuration in either case.

In early cases of chronic rheumatoid arthritis I would rely for diagnosis on—1, The condition of the bone; 2, the presence of fluid; 3, the affection of other joints; 4, condition (pain especially) affected by changes in the weather.

In advanced cases, in which somewhat acute symptoms have supervened, and in which there is softening of the bones (carpus), still more if suppuration have occurred, diagnosis from tubercle is more difficult. But this is of less importance, because the treatment is the same, viz., excision of the joint or amputation. These latter cases may be, I am quite prepared to admit, genuine tuberculosis engrafted on chronic rheumatoid arthritis; but, as I have already said, animal inoculations could best decide that.

Tubercular Arthritis.	*Chronic Rheumatoid Arthritis.*
1. Patient usually young.	1. Patient usually advanced in life.
2. Tubercular history.	2. History of rheumatism or gout, or both.
3. Tubercle elsewhere.	3. Chronic rheumatoid arthritis elsewhere.
4. Joint ovoid and boggy.	4. Ends of bones enlarged; synovial membrane thickened, and containing fluid.
5. Joint fixed; pain on movement.	5. Pain on movement, perhaps grating; joint not fixed.
6. Muscular atrophy, especially of extensors.	6. Muscular atrophy general.
7. Not affected by weather.	7. Affected by weather.
8. Slight rise of temperature, which is irregular.	8. No rise of temperature generally; rather subnormal.

VII. The last condition that I shall contrast with tubercular arthritis is tuberculosis occurring near, but not in a joint. Under this head are tubercular epiphysitis and tubercular bursitis. The former may involve the joint early, and thus become an arthritis, or may give rise to an epiphyseal abscess. The diagnosis ought to be easy, and in my experience there is usually no difficulty.

The point most to be relied on is the fixed pain in the epiphysis, increased by pressure, but not by gentle movement, and generally worse at night. In short, the localizing of the disease in the epiphysis, and not in the joint, settles the diagnosis.

Tubercular Arthritis.	*Chronic Tubercular Epiphysitis.*
1. Joint enlarged, ovoid, boggy, etc.	1. Joint free; swelling above or below joint.
2. Pain not a prominent symptom, only on movement.	2. Pain on pressure on epiphysis; worse at night.
3. Joint fixed, etc.	3. Joint not fixed usually.
4. Atrophy of muscles, etc.	4. Atrophy not so marked and not "special."
5. No special œdema of limb.	5. Limb œdematous below diseased part; slight collection of fluid in joint (symptomatic).
6. Slight rise of temperature, which is irregular.	6. Rise of temperature more marked.

In regard to tubercular bursitis the diagnosis is sometimes not so easy. The bursæ that I have seen most affected are—1, That over the trochanter major; 2, under the tendon of the psoas and iliacus; 3, over the patella; 4, under the ligamentum patellæ; 5, under the deltoid. The first two may be confounded with hip-joint disease. The treatment, however, is practically the same, so an error does not much matter.

I have found these bursal affections usually connected with disease of the underlying bone. Whether the disease commences in the bone or the bursa, I do not know; but I would be inclined to suspect the bone. I always treat these cases as if they were joint disease. The general diagnosis depends, as in the former instance, in localizing the disease. If the joint be healthy, the disease must be elsewhere. Pain, swelling, etc., will then localize the diseased condition.

There is another affection to which I might refer here, viz., tubercular teno-synovitis; but the differential diagnosis of this from tubercular arthritis should not be difficult in any ordinary case.

In conclusion, I wish to say that I do not submit the above descriptions and remarks as exhaustive of the subject. They are intended, being the outcome of my experience as a hospital surgeon during the last twelve years, to be an aid to others who may not have had as much experience in tubercular joint disease.

III.—ADVENTITIOUS JOINTS.

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THE condition of the parts in pseudarthrosis has always been a fertile source of discussion, especially with regard to the occurrence of a synovial membrane. As the whole subject is an exceedingly important one, both from an anatomical and surgical point of view, the following account of an investigation into their nature may be of some value in throwing light on a few minor points. The name "false joint" is, I think, not a particularly happy one. Many of them are undoubtedly "false" in position, but, on the other hand, are of an extremely advanced type as regards their structure. A superficial inquiry into the subject is sufficient to demonstrate that they naturally arrange themselves under certain heads, and in describing and commenting on the specimens, I shall adopt the following classification, which, I think, is worthy of consideration:—

1. Joints occurring in the course of a diaphysis.
2. Joints formed between an epiphysis and diaphysis.
3. Interphyseal joints.
4. Joints arising from abnormal apposition of osseous surfaces.
5. Substitution of a normal site of one variety for another.

Previous to dealing with these classes in detail, it will be well to briefly consider the development of a normal joint. Hepburn[1] summarizes the process somewhat as follows:—

> "The bone matrices and articular disc are originally continuous, and are derivatives of a common blastema. The articular disc may develop into cartilage forming a synchondrosis, into a fibrous tissue forming a syndosmosis, or may partly cleave to form a cavity. If the cavity remain of small size and the surrounding disc develop into white fibro-cartilage, an amphiarthrosis is formed. An enlargement of the cavity results in a diarthrosis. The proximal and distal segments of the articular disc develop into articular cartilage for the joint, and probably form part, if not all, of the epiphyseal ends of the bones. The circumference of the articular disc develops into the capsule of the joint. Interarticular fibro-cartilages and ligaments are derived from the articular disc as the result of modifications of the joint cavity. The cells lining the cavity have a double fate. Those in relation to ligamentous structures, and thus within reach of a direct blood-supply, become specialized into a synovial membrane. Those applied to articular cartilage are present in the bird at the time of hatching, but in the case of the mammal have degenerated; probably in both cases they disappear as the result of friction."

1. *Joints occurring in the Course of Diaphyses.*

These are by far the most varied, ranging from the primitive syndosmosis, where the union is effected by fibrous tissue as high as the enarthrodial, where the elements of a complete diarthrosis are combined with free mobility. They may be either congenital or acquired. The latter is much the commoner, and the factors in its causation are an initial traumatism, causing a fracture of the bone. The ends do not unite in the ordinary manner, but, either due to continued movement or deficiency in formative material and forces (generally both), proceed to the formation of an adventitious joint. With very few exceptions, the process is limited to a deposit of fibrous tissue between the contiguous ends; towards the bone the tissue is impregnated with cartilage cells, and there is generally a deposit of fibrillated cartilage over the ends themselves. The development, however, is not always arrested here; the centre of the tissue may become absorbed, and the cartilage-clad ends come into apposition. The peripheral fibrous tissue which has escaped absorption constitutes a capsule. Very rarely indeed is the process consummated by the evolution of a true and functional synovial membrane, which differs from that of an ordinary joint only in a few minor histological details. Some surgeons deny that this is ever the case. There are, however, numerous specimens on record which bear out the statement, one especially of the tibia, quoted by Holmes,[1] where the patient was able to go about his daily avocation as a club messenger for seventeen years. The ends of the bones were rounded, the lower being hollowed into a cup to receive the upper; they were encrusted with fibro-cartilage, and bound together by a tough fibrous capsule. This, and also the ends of the bones, were covered by a membrane "secreting a substance something like synovia."

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[1] Hepburn, *Journal of Anatomy and Physiology*, vol. xxviii. p. 507, *et seq.*

I have met with two cases where a fracture has been followed by the formation of a joint which, on subsequent post-mortem examination, proved to have a synovial membrane. The first case was that of a man who, twelve years prior to his admission to the hospital for phthisis, had been knocked down by a runaway horse, and sustained a fracture of the clavicle, external to the coraco-clavicular ligament. An examination during life showed that the outer half-inch of the clavicle was freely movable on the shaft. Post-mortem it was found that an arthrodial joint had been formed, in which the adventitious synovial membrane differed from the ordinary type in that it was more fibrous, and was, in addition to lining the capsule, reflected over the ends of the bones, which were encrusted with fibro-cartilage.

The second was found in the rib of a dissecting-room subject, where the opposed surfaces were prolonged into two spurs, surmounted by cartilage-clad facets, which had each a distinct capsule and synovial membrane. That the joint had developed subsequent to an injury was evidenced by the condition of the two ribs above, which had also been broken, but had united in the ordinary way. Congenital examples of this class are exceedingly rare, and I have, so far, been able to meet with only one example. This occurred in a fœtus where there was a solution in the continuity of the humerus, with the formation of a joint by reciprocal reception. Some of the examples of supernumerary phalanges are probably due to the formation of adventitious joints of this class.

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[1] Holmes' *System of Surgery*, 5th edit.

2. *Joints formed between Epiphysis and Diaphysis.*

On comparing the relative frequency of the congenital and acquired types in this class, the former is found largely to preponderate. The reasons for this are obvious. Injury to, or disease in, an epiphysis usually results in one of two conditions, provided it is of sufficient intensity to affect the parts. Either the epiphysis is completely separated and dies, or the adjacent osseous formation invades the cartilage, uniting epiphysis with diaphysis, thus anticipating by years the natural course of events, and causing a greater or less shortening of the bone. But this is not invariably the case; sometimes the epiphysis does not die, but again becomes united by fibrous tissue to the shaft.

The congenital form is much more frequent than generally admitted, and its structure is usually of an advanced type. Examples may be met with in any part of the skeleton, and are especially liable to occur in the neighbourhood of congenital dislocations. I have noticed that it occurs most frequently between the basi and thyro hyals.

3. *Joints formed between Epiphyses.*

With one exception these are very rare, and the observations made with regard to Class 2 are equally applicable to them.

The one which occurs comparatively frequently is that between the internal condyle of the humerus and the lower end of the compound epiphysis. This, because of its exposed position and late union, is liable to be detached, and the subsequent union is more frequently fibrous than osseous in character.

4. *Joints arising from Abnormal Apposition of Osseous Surfaces.*

Under this class the great majority of adventitious joints fall. The varieties are extremely numerous, as are also the causes which give rise to them. The most familiar examples will be found in the by no means uncommon cases of congenital dislocations. Here the normal articular surfaces are not in apposition, or only partially so, one articular surface being displaced on to the general surface of the other bone, where it hollows out by pressure absorption a socket for itself. The bones are kept in apposition by a modification of the original capsule, and the synovial membrane is likewise generally a derivative of the normal. In extreme cases, the articulation may be a mere synarthrosis or a new capsule, and synovial membrane may be developed in the usual manner. This class is well exemplified in the modifications of the articular surfaces produced by posture in some races,—*e.g.*, the Punjabi,[1] and the front of the tibia and astragalus found in some of the more degraded races; also in many cases of unreduced dislocation a synovial articulation is ultimately formed. In a case of unreduced shoulder dislocation, which I dissected, a secondary glenoid cavity was formed on the axillary border and adjacent dorsum of the scapula. An adventitious capsule of great thickness was present, and there were traces of a synovial membrane.

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[1] Havelock Ellis, *Journal of Anatomy and Physiology*, vol. xxviii. p. 1, *et seq.*

The best example of this class of joint which I have observed I took from a fœtus in which there was a congenital absence of the radius and pollex on both sides. Here the fibrous band which represented the radius had by its contraction swung the carpus and manus round on to the outer aspect of the shaft of the ulna, so that the hand projected at right angles to the long axis of the bone; the external aspect of the ulna was encrusted with typical hyaline cartilage and articulated with the displaced carpus, and formed a perfect synovial articulation.[1] Another purely pathological variety falling under this class is that met with in arthritis, where calcareous masses formed in the vicinity of a joint articulate with the ends of the bones. The synovial membrane is in this case an extension of that lining the joint proper, as these nodules are generally developed in the outer fibrous layers of the synovial membrane.

5. *Substitution of one form of Articulation for another.*

This change may be either a regressive or progressive one, and, as can be gathered from the account of the development of an ordinary joint, is a normal process in the animal economy. Some joints are, under certain circumstances, continually on the move; instance, for example, the influence of pregnancy in the pelvic joints, better seen even in the lower animals than in man. Cases have from time to time been recorded where an arthrosis has been developed at the articulation of the first rib with its cartilage.[2] A beautiful example of a progressive change was met with in a phocomelic fœtus, where the occipital bone had been driven into the cranial cavity and a perfectly typical arthrosis substituted for the ordinary synchondrodial articulation between the basi-occiput and post-sphenoid.[3]

Ere a joint be relegated to the highest class it must possess the following elements,—bones, cartilages covering these ligaments, a synovial membrane, and a cavity. A consideration of adventitious joints under these heads is instructive, as it emphasizes many of the more interesting features.

Bones.—The conditions of the articulating ends in these joints are necessarily somewhat varied, but it is important to note that in Class 1 (joints occurring in the course of a diaphysis) the ends are generally atrophied and attenuated; in some cases a mere shell alone remains. This is not surprising, considering that in many of these both the formative material and forces are deficient. In a few cases the ends are enlarged and consolidated. Cases falling under the other classes have usually the ends hypertrophied and consolidated. An analysis of these adventitious joints shows that the higher the type of joint the better developed are the articulating elements.

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[1] Baxter Tyrie, *Journal of Anatomy and Physiology*, vol. xxviii., part 4.

[2] Luschka, *Wiener Sitzungsber*, 1860; Arbuthnot Lane, *Guy's Hosp. Rep.*, xliii.

[3] Baxter Tyrie and Haigh, *Teratologia*, July 1894.

Cartilage.—The type of cartilage encrusting the bones in a normal diarthrodial joint is generally stated to be hyaline, but exceptions to this are found in the sterno-clavicular, acromio-clavicular, and other meniscus joints, where a fibrous element is developed in the matrix, constituting a variety which is almost identical with ordinary fibro-cartilage. That found in adventitious joints is very rarely hyaline; in the congenital cases it resembles the somewhat hybrid variety described above, while in acquired examples it is always of the true fibrous type. The chondrification is not uniform all over the surface; in a series of sections areas of pure fibrous tissue are met with, as are also islands of bone, which may rank histologically from mere calcareous nodules upwards. Part of the cartilage may even become detached, forming a loose body in the joint. Further reference will be made to this when considering the joint cavity.

Ligaments.—These are extremely varied in their nature, but on the whole are much thicker than in the normal condition. The capsule may be uniform and complete, but more often is represented by a series of specialized bands with weak points between. Occasionally in congenital cases there is an aperture through which the cavity is continuous with that of a neighbouring bursa.

Cavity.—This diarthrodial element is necessarily only found in the more highly developed cases, where in some it is represented only by a weakening in the central tissue, in others it is as perfect as in an ordinary articulation. Many conform to an intermediate stage. In congenital cases the mode of its development is probably similar to that of an ordinary joint. In the acquired, three factors are in operation—the mobility of the parts, the contraction of the peripheral fibrous tissue occluding the nutrient vessels, and the general low vitality. In ordinary cases the permeating lymph would be equal to the task of sustaining vitality, but the constantly interrupted stream is not, and the tissue between the bones degenerates in consequence and a space is formed. This space is not always complete; in many cases trabiculæ extend across, which on examination are found to exist of bands of fibrous tissue, which, owing to the contour of the parts, have escaped the general pressure absorption. The cavity may also contain loose bodies,—fibrous, osseous, or cartilaginous. There is a preparation in the College of Surgeons' Museum, London, which well exemplifies this.

Synovial Membrane.—This in an ordinary articulation invests the internal surface of the capsule and interarticular structures, but stops short at the margins of the encrusting cartilages. According to Toynbee,[1] it extends over the surface of the cartilage both in the fœtus and adult, this portion differing from the capsular in having no epithelial layer, and consequently no secretory function. His statement regarding the presence of this layer in the adult is not now generally accepted, and Hepburn has recently sought to disprove its presence in the fœtus. With him I cannot agree, as I have observed it as a distinct layer in several human fœtuses ranging from the fourth to the ninth month. It persists longest in those joints exposed to least movement, and I have noted its existence in the interchrondial joints of the ribs at the fourth year. With regard to its nature in the class of joints under discussion, a study of which throws some light on the above, I have found in most of the congenital, and invariably in the acquired, that where a synovial membrane was present it was by no means limited to the capsule, but extended over the contiguous ends of the bones, and was functionally active in its entire extent.

IV.—YELLOW FEVER.

By CHARLES FINLAY, M.D. (of Havana).

(*Concluded from page* 335.)

Natural and Artificial Immunity.—Some individuals appear to be entirely refractory to the yellow fever infection, and among those who are not so some are more likely than others to be mildly attacked, or to recover when the attack happens to be severe. Thus the Chinese coolies and the African Negroes imported to the West Indies have, as a rule, proved refractory, extremely rare exceptions having been registered in Havana. After prolonged residence in a temperate climate, through successive generations, the Negro race loses to some extent its original immunity, as has been shown this very year during the epidemic at Brunswick (Ga.), in the United States, several hundreds having there been attacked with yellow fever, though with a very low death-rate. A case has also been observed in Havana this year in a Negro from the United States belonging to the crew of an American vessel. Among the whites it is generally admitted that, *cœteris paribus*, foreigners from northern climates suffer more severely than those from countries nearer the tropics. Within the tropical zone, the inhabitants of highlands beyond 1000 feet above the sea-level are susceptible to the disease. The inhabitants of the island of Cuba who reside at some distance from an endemic focus, even in low levels, and have had very little intercourse with infected localities, are apt, on visiting centres of infection, to suffer "acclimation fevers," and during severe epidemics even albuminuric and melano-albuminuric yellow fever. If a case declares itself in such localities, an epidemic may be developed. In the neighbourhood of an endemic focus in the outskirts of Havana, and even in some establishments within its precincts (cloistered convents), susceptible foreigners may sometimes reside during a number of years without becoming immune.

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[1] Toynbee, *Medical Gazette*, 1837.

Foreign children are often attacked in Havana, but the disease is generally less severe in them; it is also less fatal in youths under the age of puberty, in women whose menstrual functions are regular, and in the aged, than in young and middle-aged adults of the male sex.

During an epidemic a complete or partial immunity is observed in four classes of individuals of the white race who have presumably been exposed to the infection, viz.:—

1. A small number among the newly-arrived foreigners, who, for various reasons unknown, remain refractory to the disease, and continue so in subsequent epidemics.

2. With very few exceptions, all those who have previously experienced an attack of regular yellow fever, with well-marked albuminuria, either recently or at some remote period.

3. All the adults, and almost all the children who have been born and bred in the city of Havana, never having absented themselves during consecutive summers from the endemic focus.

4. The generality of foreigners who have resided during five or six consecutive years in this city without having experienced the disease in any form whatsoever, or only having had "acclimation fevers," the security being greater in proportion as the time of residence has been longer.

The immunity in the three first classes is, as a rule, absolute, so long as the persons continue to reside in yellow fever countries; but it may be partially or totally lost through an absence from such countries, or even by a mere withdrawal from chances of infection, during several consecutive epidemic seasons (probably not less than four or five years). In the fourth class, on the other hand, the immunity is often only partial, "acclimation fevers," or mild albuminuric forms, being still occasionally observed on severe exposure; but when, as exceptions, severe attacks occur among them, the chances of recovery are not much greater than they are in ordinary cases. Even without the condition of prolonged residence, experience also teaches that after a single attack of "acclimation fever," there are great probabilities that beyond a possible repetition of the same form, or, more rarely, a mild albuminuric attack, little danger will be incurred by continuing to reside in the place.

As regards the immunity observed among the whites who have been born and bred in Havana, it cannot be considered as hereditary, for other children of the same parents, born in countries where yellow fever is unknown, do not partake of the same exemption. Among native children cases of "acclimation fever" probably often occur, though not diagnosed as such, and in the outskirts of the city, or, more rarely, in the city itself, children are not unfrequently attacked with a form of fever ("*fievre de burros*") in which "black vomit" and albuminuria are common symptoms. It seems probable, therefore, that in many instances the immunity observed in the white natives must be attributed to mild attacks experienced in early life. There is reason to believe, however, that it is sometimes acquired through an attack suffered *in utero*, in consequence of infections transmitted by immune mothers; for in two instances within my knowledge immune mothers have given birth to children who had fever at the time when they were brought into the world, and only recovered after a few days. In one of these cases the mother had been attending a severe case of yellow fever during the last month of her pregnancy in the very room in which her child was born; and in the other, the mother lived in a district where several cases of yellow fever had recently occurred.

In the uncertainty that still surrounds questions of immunity, all conjectures must be hazardous. I beg, however, to submit the following suggestions, even if they serve no other purpose beyond linking together the peculiarities which are actually observed in reference to yellow fever.

The transmission of the disease through an immune mother to the fœtus *in utero* shows that the immunity does not exclude the introduction and circulation of the specific germs through the blood-vessels or lymphatics, but rather provides some means by which their toxines are rendered harmless. In accordance with our present conception of chemotaxis, it may therefore be surmised that, in susceptible subjects, when the specific germs, together with their toxines, are introduced, a number of leucocytes will be attracted to the spot, and a struggle will follow in which, according to the quantity and intensity of the virus, the leucocytes will either perish or survive. In the first case, the germs will continue to develop, and will finally poison the system with their toxines; if, on the contrary, the leucocytes survive, they will have acquired the property of secreting antitoxines, which will either completely or only partially protect the system against the toxines which are being elaborated. Now, as these particular leucocytes multiply by division, they may transmit the newly-acquired immunizing faculties to several generations of their descendants. During long residence of the same persons in an endemic focus, the yellow fever germ will in all likelihood be introduced again and again, producing only mild morbid phenomena or none at all; but each time new sets of leucocytes will acquire immunizing properties, until finally, after repeated exposures, all the leucocytes will have become similarly differentiated, and permanent immunity will follow. During a severe attack of the disease, on the other hand, the whole system being invaded by the specific toxines, the leucocytes must either all perish or all that survive will remain thereafter endowed with the immunizing faculty that has been surmised, and permanent immunity will be there and then established. Absence from yellow fever centres might, after some years, extinguish the special properties thus acquired by the leucocytes, and the immunity in such cases would be lost.

In Natural History there are instances in which, although no microbial products are concerned, some explanation like the one just given seems called for in order to understand the effects of the venom which some insects pour into the wounds which they inflict. Taking as an example the Havana mosquitoes (with which we are particularly concerned in this article), a marked difference is observed in the effects produced by their stings in new comers and in older residents. In the florid foreigner from the North (specially in those whose skin is fair and delicate), during the first weeks after their arrival the mosquito sting is not only more acutely felt, but its effects upon the skin are much more visible. Soon after the insect withdraws its lance a weal is apt to form, of a whitish colour, contrasting with the red hyperæmic zone which at the same time, or soon after, is developed around it. After longer residence the same persons will scarcely feel the sting of the diurnal species, and no welt will be produced by it, but only a small pimple, scarcely raised above the surface, which may not disappear, however, for several days. Here the doctrine of chemotaxis seems to apply. The white welt sometimes formed indicates the attraction of the leucocytes by the mosquito venom, and the non-appearance of such welts in the same persons, after longer residence, would signify that the venom is now neutralised by the leucocytes nearly as fast as it is instilled into the wound.

Now, if both the chemotactic properties of the mosquito venom and those of the yellow fever virus are brought into play in one and the same operation, might it not happen that immunizing faculties would be developed in the leucocytes against yellow fever toxines of moderate intensity, as well as against the mosquito venom? A summary account of the experiments performed by myself (and some also by my friend Dr Delgado) during the last twelve years, will enable the reader to judge for himself. The experiment has consisted in first applying a captive mosquito to a yellow fever patient, allowing it to introduce its lance and to fill itself with blood; next, after the lapse of two or more days, applying the same mosquito to the skin of a person who is considered susceptible to yellow fever; and, finally, observing the effects, not only during the first few weeks, but during periods of several years, so as to appreciate the amount of immunity that should follow.

Between the 30th of June 1881 and the 2nd of December 1893, eighty-eight persons have been so inoculated. All were white adults, uniting the conditions which justify the assumption that they were susceptible to yellow fever. Only three were women. The chronological distribution of the inoculations was as follows:

—Seven in 1881, ten in 1883, nine in 1885, three in 1886, twelve in 1887, nine in 1888, seven in 1889, ten in 1890, eight in 1891, three in 1892, and ten in 1893. The following table will show the length of time during which the "inoculated" resided in Havana (as also some ten or twelve who resided most of the time in Ceinfuegos). During this time the inoculated were under observation, so far, at least, as to obtain information about any attack of yellow fever that was suffered by them (with the exception of only one case, that of a youth who was lost sight of after the inoculation).

Result unknown in	1 case.	Four years in .	28 cases.
Less than one year in	11 cases.	Five years in .	2 „
One year in . .	3 „	Six years in . .	8 „
Two years in .	12 „	Seven to ten years in	9 „
Three years in .	14 „		—
		Total, .	87 cases.

The yellow fever patients upon whom the mosquitoes were contaminated were, almost in every instance, well marked cases of the albuminuric or melano-albuminuric forms, in the second, third, fourth, fifth, or sixth day of the disease. In some of the susceptible subjects, the inoculation was repeated when the source of contamination appeared uncertain.

Among the eighty-seven who have been under observation, the following results have been recorded:—

1. Within a term of days, varying between five and twenty-five after the inoculation, *one* presented a mild albuminuric attack, and *thirteen* only "acclimation fevers."

2. Among the seventy-three who did not present any distinct attack within the first twenty-five days—

40 were subsequently attacked with simple "acclimation fever."
5 suffered an attack of regular albuminuric yellow fever.
4 had melano-albuminuric yellow fever.
24 have never had any fever of the yellow fever type.
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Two of the melano-albuminuric, and *one* of the albuminuric were fatal, giving a mortality of 3·87, equivalent to 3½ per cent. One occurred in 1884, and the two others in 1893.

Apart from these general results, the following particulars deserve to be considered:—The yellow fever epidemic, during the present year (1893), has been unusually severe, showing not only a large number of invasions and a high death-rate, but also several exceptional cases, in natives of the island, in an American Negro, and in a foreign sister of charity who had been residing in the civil hospital for eleven years. Special opportunities have, moreover, been offered for observing the effects of the infection upon a certain number of inoculated persons as compared with others similarly exposed, but who had not been previously inoculated. This happened in consequence of a severe infection which found its way, through the non-inoculated subjects, into the two establishments (religious communities) in which the majority of my mosquito-inoculations have of late years been performed. One is the residence of the Jesuit Fathers, and the other the Convent of the Carmelite Friars in this city, both having been under my medical charge for the last eight or nine years. Members of those communities arrive almost every year, and stay, as a rule, in Havana during four consecutive years at the least. After deducting, as practically insusceptible, all the *inoculated* and *non-inoculated* who have resided more than six consecutive years in Havana, the susceptible inmates in each establishment (from July to December 1893) may be thus classified—

Jesuits—2 non-inoculated and 17 inoculated.
Carmelites—3 non-inoculated and 10 inoculated.

Of the two *non-inoculated* members of the Jesuits' community, one was attacked with violent melano-albuminuric yellow fever on the 25th of July and died on the 29th. He had resided four years in Havana (from 1880 to 1884), and experienced at that time an attack of yellow fever; he then returned to Spain, and only came back to Havana in 1891. The second *non-inoculated* Jesuit has now resided during five consecutive years in the same establishment without having as yet experienced any fever whatsoever.

Of the three *non-inoculated* Carmelites, one had an "acclimation fever" on the 27th of June; another was attacked on the 20th of July with severe albuminuric yellow fever, slight appearance of black vomit, intense uræmic delirium, parotitis during convalescence, and prolonged mental derangement; the third has so far escaped the infection. No death. All the three had arrived in December 1893.

The mortality among the *non-inoculated* of both communities has been therefore 1·5, equivalent to 20 per cent.

Among the seventeen *inoculated* Jesuits, a series of eight cases occurred between the 16th of August and the 2nd of November, consisting of five "acclimation fevers," *one* mild albuminuric, *one* regular albuminuric yellow fever, and *one* fatal albuminuric without black vomit.

Among the ten inoculated Carmelites, a series of seven cases occurred from the 16th of August to the 27th of November. Five were "acclimation fevers," *one* was a severe albuminuric case, and the seventh a *fatal* melano-albuminuric.

The mortality among the twenty-seven *inoculated* of both communities = 2·27, or 9 per cent.

The mortality among those who were attacked with the disease was 1·3 = 33 per cent. for the *non-inoculated* and 2·15 = 13 per cent. for the *inoculated*.

By a singular coincidence it happened that both the fatal case among the *inoculated* Carmelites and the fatal case among the *non-inoculated* Jesuits only came under treatment when the disease had already advanced beyond any chance of control.

The fatal case among the *inoculated* Jesuits had been inoculated on his arrival six years ago, and had never experienced fevers of any kind until his fatal yellow fever. It might therefore be inferred that the protection conferred by the mosquito inoculation may be, under certain circumstances (as happens with cow-pox vaccinations), totally or partially lost after five or six years. This is confirmed by the facts that the Jesuit who suffered an attack of mild albuminuric fever had arrived in Havana and been inoculated at the same time as the former, and he likewise never experienced any attack of fever until the present year. A third Jesuit, who came and was inoculated at the same time, but returned to Spain after four years' residence in Havana, never experienced any fever at all.

Among the Carmelites, on the other hand, of the seven *inoculated* who were attacked, all but one, who had an acclimation fever, had arrived and been inoculated within the last twelve months. The fatal case of this group had presented some peculiarities worthy of notice. A fortnight before his attack of yellow fever he was taken with hæmoptysis occasioned by heart disease (mitral insufficiency), of which he had been suffering before in Spain. It is probable that this circumstance contributed in the early appearance of albuminuria and suppression of urine which characterised his illness.

Method of Applying the Mosquito Inoculation.

1. The mosquitoes should be procured in some dwelling where no yellow fever infection is suspected, choosing in preference young insects, with the white rings upon their hind legs and the white dots upon their body distinctly marked. This may be done by watching the insect when it alights upon the hand or wrist, and, as soon as it begins to drive its sting into the skin, covering it under the mouth of a small clean phial or test-tube, and closing the latter with a plug of cotton.

2. A characteristic case of yellow fever having been chosen, not further advanced than the fifth or sixth day, the skin of the arm or chest is washed with pure water, and, by removing the plug of cotton while the phial is being inverted upon the skin, the captive mosquito is allowed to sting and to fill itself completely from the patient's blood. After it has completed its operation, the phial is again closed.

3. After all the blood absorbed by the mosquito has been digested or excreted, the insect will be ready to sting a second time. The interval required for this to take place varies, according to the season and temperature, between forty-eight hours and four or five days. The insect is then applied to the arm or wrist of the person

who is to be inoculated in the same manner as was done with the yellow fever patient.

4. If the inoculation has been performed in the winter months, it is considered prudent to repeat the operation at the beginning of the epidemic season; and in any case (unless a distinct attack of albuminuric fever has been experienced in the interval), the inoculation should be repeated at the end of four or five years' residence, and also after an absence from yellow fever countries of one or two years' duration.

V.—EXTRA-UTERINE GESTATION.

By C. F. A. Moss, M.B. C.M., Medical Mission Hospital, Antananarivo, Madagascar.

(*Read before the Obstetrical Society of Edinburgh*, 14*th February* 1894.)

As four cases in which the above was diagnosed have been brought under my notice during the space of little more than six months, a brief report, contrasting the conditions met with, may not be without interest. At the outset it may be well to state that from several causes it is impossible to do more than express one's *opinion* of these cases,—no corroboration that, from a strictly scientific point of view, would be satisfactory having been possible. Two cases died, but post-mortem examinations are not permitted in this country; two recovered, one with and one without operation. And even with regard to what one notices during operation, much more than the incidental glance given to parts outside the direct field of operation is required to form unimpeachable evidence of any given condition.

The history also is often very blurred, and often wanting entirely; very seldom, indeed, is it absolutely trustworthy. After this word of explanation, I trust it will be understood why the facts I have to bring forward are so vague and unsatisfactory. I may also add, that we find gynæcological complaints common among natives of this country; and among the rest the preliminary conditions of chronic peritonitis and chronic inflammation in the genital tract, which one is accustomed to accredit with the possibility of extra-uterine gestation, are very widespread in their occurrence.

Of the four cases I wish to speak of, two illustrate the earlier phenomena met with; two went on to full term or over: in this order they will be recorded. Of the first two, one was diagnosed as a case of intra-peritoneal rupture, and was fatal; the other, as of extra-peritoneal rupture, and recovered.

CASE I.—For notes of this case I am indebted to Mr Fenn, who was called into consultation. The patient was a multipara, aged about 25. She had not been pregnant for four years. She noticed amenorrhœa for three months, and coincidently a swelling appeared, distinctly towards the right side. She considered herself pregnant. Her health was fairly good, but slight pains were occasionally felt in the pelvis. After three months had passed, she was seized with sudden faintness, and the swelling disappeared; very little external hæmorrhage occurred. For a week the faintness continued, and she was confined to bed. On the seventh day what appeared to be a piece of decidua was passed. On the eighth day Mr Fenn saw her, and found her nearly collapsed, with pulse rapid and thready, and with temperature not raised. On percussion the abdomen was tympanitic, but in both iliac fossæ there was dulness. The vagina and uterus were found on examination very soft, and their temperature was raised. In the fornices there was a boggy feeling, but no hardness. On the evening of that day she died. The diagnosis was made of an extra-uterine gestation, probably in the right Fallopian tube, which ruptured about the usual time, giving rise to attacks of severe internal hæmorrhage; and these, and possibly also the intervention of peritonitis, brought about the fatal result.

CASE II.—The second case was admitted to the Medical Mission Hospital at Análakèly, complaining of fever and diarrhœa, and a hard mass in the lower part of the abdomen. She had had eight pregnancies. The first child only is living; the rest were abortions, still-born, or died soon after birth. The last was born a year ago. There is a history of syphilis. After missing one period she thought herself pregnant, and found a swelling appearing on the right side. She was seized with sudden faintness and loss of blood. This was followed by fever. For a week she had much pain in the pelvis, and felt faint. Swelling increased in the abdomen, was first soft in character, and then hardened. There was much diarrhœa. It was about three weeks after the onset of these symptoms that she was brought into hospital.

On vaginal examination the cervix was found driven right against the pubes, and the anterior fornix was obliterated. The os externum was found high up and directed anteriorly. In the posterior fornix was a large mass, rounded and hard, which projected into the vagina. In both lateral fornices was a hard mass, which seemed cord-like in parts. The lower part of the abdomen was occupied by a hard mass extending up to just below the umbilicus, and from one iliac region to the other. The upper outline was irregular, but rounded; in the middle line was felt a firm round mass of the shape of the fundus uteri. In each iliac region there was a large rounded projection bulging out towards the anterior abdominal wall, and fading off at the sides, perfectly smooth in outline, with the exception of one spot high up on the right side, which felt like a hard cord going out from the middle line. The right side was distinctly harder than the left. The whole swelling was slightly movable, and on bi-manual examination the movement was felt to extend through the whole of the effusion.

The bowels for some days were only moved by enemata, and scybala came away; there was no diarrhœa after she came in. After a few days' use of the Pulv. Glycyrrhizæ Co., the action of the bowels became natural. The right treatment appeared to be of an expectant character; hot fomentations and injections were used, and a mixture containing potas. iodid., liq. arsenicalis, and potas. bromid. was administered.

Two weeks after admission the swelling had slightly but perceptibly diminished; the rounded mass in the middle line had decreased, so that its upper level was about half-way between the umbilicus and pubes, and was considerably below the rest of the swelling.

Three weeks after admission the upper limit of the whole abdominal swelling had fallen to four fingerbreadths below the umbilicus. The general shape was unaltered. On vaginal examination the cervix was still jammed against the symphysis pubes, but the posterior projection was almost entirely absent.

Four weeks after admission the swelling could only just be detected above the brim. The mesial mass was just above the pubes, and directed slightly to the left. On vaginal examination the cervix had regained its normal position. A hard rounded mass was still felt through the posterior fornix, but no longer projecting into it at all.

The temperature on admission was 101° F.; on the fourth day it fell to normal; from the sixth till the twenty-second day it varied between 99° and 102° F. She left hospital on the thirty-sixth day.

This case is but suggestive of Fallopian tube gestation; but the symptoms and physical signs, while undoubtedly pointing to pelvic hæmatocele, warrant, I think, the interpretation of the cause as extra-uterine gestation, especially if the enlargement of the uterus be considered, and its more rapid decrease in size as compared with that of the lateral swellings.

Of the remaining two cases, both of which were operated on, the first presents a history of early rupture of a tubal gestation and of subsequent growth; of the second no history of such rupture was forthcoming.

Case III.—The patient was admitted to the Análakèly Hospital in August 1889, with the statement that she was seven months pregnant, and that she suspected that miscarriage was imminent. On examination the os was found dilated to about the size of half a crown; just within it the cervix was hard and rough all round. There was no pain, and there was no discharge of any kind. The next day a little blood and a few pieces of membrane-like débris came away from the rough cervix. No history was given of abnormal symptoms during the pregnancy; nothing being suspected, no leading questions were asked. The woman complained of constant pain, not severe, about the epigastric region—an extremely common symptom here referred to as pain "at the mouth of the heart." This was relieved by stomachic remedies. She did not miscarry, but left hospital in September, before labour was due, as the hospital was then temporarily closed.

In December we saw her again at the Norwegian Mission Hospital, in consultation. At that time the pregnancy would be advanced to twelve months.

The following history had been elicited, and was given by Dr Borchgrevink:—Age over 30; one child born many years ago; syphilis at 17, some time after the birth of that child. Menstruation since then had been normal, with the exception of one slight attack of dysmenorrhœa. A year ago she suffered from severe pain in the lower part of the abdomen, with rigors. This was relieved by fomentations. Menses then stopped (about December 1888), and she suffered from one or two attacks of pain, and from constipation; and she also passed some blood per vaginam. One day—she cannot remember when—she was taken suddenly giddy and faint while at stool, and the abdomen became very tense. Soon after some dark blood was passed per vaginam. Constipation followed, and after the passage of much wind the abdomen appeared to decrease in size very much. Enlargement on the right side continued. At the end of five months she felt movements, which she thought excessive. There were vomiting and epigastric pain. The movements ceased in September, after she left Anákèly.

On examination the vagina appeared shortened; the anterior and posterior and right lateral fornices were depressed by a rounded doughy swelling, evidently situated on the right. The os was slightly open and rough. Per rectum the rounded mass to the right was very distinct. The abdomen was considerably distended by a movable object; in the right iliac fossa it was felt very hard, as if bony; and in the right hypochondrium was a small roundish, hard mass, evidently bone, and reminding one of a knee or elbow. Abdominal section was recommended, as the diagnosis of extra-uterine gestation had been made, and the woman was feverish, thin, and getting very low-spirited.

Dr Thesen, who was in charge of the case, operated. An incision was made in the middle line from umbilicus to pubes. A perfectly smooth cavity being opened into by the incision, it was concluded that the peritoneum had been reached. On each side, however, quite near the incision, a sac containing the gestation product was found adherent to the abdominal wall. With trocar and cannula a quantity of dark olive-green fluid was removed from the cyst, which was taken to be the liquor amnii.

The skin incision was then enlarged to just above the umbilicus, and the sac wall opened. The child's hairy scalp was found immediately under the incision, and the child was removed and the umbilical cord ligatured. Many adhesions attached the fœtus to the sac wall; these were readily broken through, and collections of fluid thus opened into. The placenta was found adherent in the lower part of the sac, but was readily removed without any hæmorrhage. From its position it appears to have been the object felt to the right on vaginal examination. The sac was thick-walled, and appeared to have a recess on each side. The uterus was felt through its wall anteriorly in the middle line, and slightly enlarged. The sac was washed out with perchloride of mercury solution, stitched up, and a drainage-tube inserted, and the abdominal wound was also stitched up as far as the tube. The dressings were iodoform, oiled silk, and salicylic wool. For four days the temperature was between 101° and 103° F., but then sank to normal. There was a little pain on the second day from blocking of the drainage-tube. By the thirteenth day she was able to sit up; the discharge, however, continued copious, purulent, and occasionally offensive. A sinus remained for some months, but eventually healed.

This case, being apparently the first of the kind operated on here, occasioned a considerable amount of interest.

It appears to have been a case of rupture into the broad ligament of a pregnancy in the right Fallopian tube, growth of fœtus, with probable stripping-off of the peritoneum; the incision probably opened into the mesial tube of peritoneum, as described by Hart and Carter, and suggested by Tait. Thus the operation, if performed laterally, would probably have been an extra-peritoneal one.

Case IV.—The fourth case was admitted to Análakèly Hospital on June 9, 1890, with the statement that she was in labour, and that the "placenta" had come away, but the child was not yet born!

She appeared a healthy woman of about 28 years of age. This was her first pregnancy, and it had advanced to about full time. She could give no account of abnormal symptoms during her pregnancy, and even leading questions failed to elicit anything at all calling for remark. She stated that she went into labour on the 6th instant (three days before admission), and experienced pain at the lower part of the back, and in front also. On the 7th the movements of the child ceased, and about that time there was passed what was thought to be the placenta. It appeared to have been membranous, nearly the size of the palm of the hand, thin and foul, and was evidently the decidual membrane of the uterus. There was no other discharge of any kind.

On vaginal examination the parts were extremely soft; the cervix uteri did not project at all from the vaginal roof; the os was dilated only so as to admit the tip of the middle finger, and immediately within it a rough soft mass was felt on the left side. The smell was very offensive. No evidence was obtained of any part presenting, or of the fœtus being inside the uterus.

On abdominal examination the enlargement was found to be chiefly from side to side, and on percussion there was dulness up to the level of the umbilicus. It was stated that there had been a decrease in the size of the abdomen since the commencement of labour. On palpation the parts of the fœtus could not be distinctly felt. Auscultation revealed nothing.

A tent was ordered, but by the next day there was no change in the dilatation of the cervix; there was pain at and below the umbilicus. The patient had vomited five times; pulse and temperature were now normal. The uterine sound was passed for over 2 inches. Barnes's bags were then introduced, but caused no appreciable difference in the dilatation of the cervix. Further discharge had occurred of shreds, extremely foul smelling, and among these were some translucent villous-like bodies resembling small white currants. The temperature was 101° F., and pain continued.

The diagnosis of extra-uterine gestation was made, as a result of the consideration of all these facts; and on account of the patient's distress and of the temperature, it was decided to operate the next day. The patient was meanwhile taken to another house, specially cleansed and prepared.

On the 12th, therefore, abdominal section was performed; and I have to acknowledge the kind assistance of Mr Fenn in the conduct of the case, and of Dr Thesen also at the operation.

On examination under chloroform, a hard, rounded mass was felt in the anterior fornix, freely movable, and readily got between the hands on bi-manual examination. With the finger in the uterus there was felt to be a large hard mass on the right and anteriorly; and the left wall of the uterus inside was rough, the rest smooth. The bladder was emptied.

After scrupulous care in cleansing, a small exploratory incision was made in the middle line between the pubes and umbilicus. On nicking the peritoneum a dark mass of clot was seen inside, and a small quantity of fluid of a very dark colour escaped. The incision was enlarged above and to the left to the level of the umbilicus, and below to near the pubic symphysis. Running parallel with the middle line, and just a little to the left, was the umbilical cord, lying among the clots. Following it up, the fœtus was felt. The head was to the right of the incision and at its upper limit, the vertex being directed towards the anterior abdominal wall. The body appeared curved first downwards and then upwards to the left, with its anterior surface directed anteriorly. A small part of the omentum covered it in one place, and on lifting this aside, the body of the child was removed.

It was a female child, well nourished, and apparently only recently dead; the epidermis was beginning to peel off. Crossing at about the middle of the incision, and below the child's body, was seen a coil of large bowel passing transversely and close to the surface, the umbilical cord intervening between it and the anterior abdominal wall.

After the removal of the child the fingers were carried along the cord to the placenta, which was found stretching from side to side at the lower part of the abdomen, and immediately in contact with the anterior abdominal wall. Its upper edge was nearly midway between the pubes and umbilicus. The cord was attached on its anterior surface. At each side the placenta was firmly attached, specially on the left. The middle part was free, with the exception of its lower edge, which was connected by a thin membrane with the parts immediately below it, so that on introducing one finger in front of and one behind the placenta, they were only separated by this thin membrane. The uterus and broad ligaments lay posterior to the placenta and unattached to it, except possibly where the infundibuliform ligament and pelvic peritoneum coalesce.

The question as to whether the child was entirely free or enclosed in a sac naturally interested us; no sac was discerned, and the appearances of parts at the operation, viz., the omentum over a part of the child, the large bowel immediately below it and in intimate connexion with the child, and the situation of the placenta just over the uterus, seemed to us strongly to point to its being free.

Far out in the right broad ligament there were felt three rounded masses about the size of a mandarin orange, and hard; a little blood was withdrawn from these by the hypodermic needle. A good deal of dark fluid was removed from the pelvis with sponges, but no bleeding point appeared anywhere. No fluid resembling liquor amnii was seen; there was only the dark fluid like blood.

The upper part of the incision was then closed and the cavity drained by two drainage-tubes at its lower limit. Iodoform was dusted on, and the dressings were oil-silk, salicylic wool, and gauze bandage. In the evening the vagina was plugged with antiseptic tow. The temperature was 102°·2 F., and the general condition fair. The bowels, however, had been moved.

Next day (13*th*) one drainage-tube was removed, and the wound further stitched up under chloroform. Also the rough membrane felt in the uterus was removed with the finger, and the surface was cleansed with pure carbolic acid introduced on the dressed wound. The patient had had a restless night in spite of a sleeping draught, and the breath that morning was noticed to be very foul, the teeth and lips dry, and the conjunctivæ rather yellow. Pulse, 132; respirations, 32; temperature, 100°·8 F. There was a little improvement during the day, and a good deal of dark blood oozed from the wound on the 14*th*, but there was no offensive smell.

On the 15*th* she was listless, unconscious at times, and the urine was occasionally passed involuntarily. Pulse, 120; respirations, 17; temperature between 99°·4 and 100°·4.

16*th*.—She was unconscious, passed everything involuntarily, and although the upper part of the wound looked well, there was a putrid odour from the lower part. Pulse, 114; respirations, 24; temperature sank to 97°·8.

17*th*.—The condition being unchanged, it was decided to endeavour to remove the placenta, which was done by undoing one or two stitches, and by gentle traction on the placenta. It was extremely fœtid. There was then seen a cavity bounded above by the bowel previously mentioned, and apparently quite cut off from the rest of the peritoneal cavity. It was freely washed out, and all the shreds of adherent placenta removed. The edges of the lower part of the incision were freshened and partly stitched up, and the cavity was stuffed with iodoform gauze. That afternoon she seemed better and more comfortable; the appetite was still good; hiccough, which had been present in the morning, disappeared, but the unconsciousness continued.

18*th*.—The wound was found perfectly odourless, but the patient had developed pneumonia, and the temperature had risen to 101°·6 F. In spite of appropriate treatment she sank, and died during the morning of that day.

I have related as fully as possible the details of this case, in spite of the knowledge that much of the treatment is open to criticism, for it appears to me to present points of considerable interest.

All danger in the operation might possibly have been avoided if we had waited the usual term of several weeks before performing the abdominal section, and contented ourselves at the time with merely clearing out the foul membrane from the uterus, and treating the various symptoms as they arose.

In attempting to arrive at an explanation of the case, one is met at the outset by the want of any history that could possibly point to the rupture of a Fallopian tube gestation. Symptoms may, for all that, have been present, but put down to a transient cause and summarily forgotten, or else considered as too unimportant to mention.

From the observations made at the time of operation we should have had no difficulty in diagnosing the situation of the fœtus as intra-peritoneal and free among the abdominal viscera, were it not for the possibility of there being a very thin-walled cyst adherent to those viscera and escaping our observation. As before mentioned, the appearance of the omentum, bowel, uterus, and broad ligaments, and the position of the fœtus and placenta apparently in one cavity with them, would point to the fœtus being free and not enclosed in a sac. There was also nothing seen to lead to the conclusion that a secondary rupture had occurred into the peritoneal cavity, unless the presence of blood and clot were sufficient to prove this.

The presence of a possible sac receives some weight, however, from the condition seen at the operation for removing the placenta, when the cavity in which fœtus and placenta had been seemed separate from the rest of the peritoneal cavity; no other part of the bowel than the transverse portion alluded to was seen at all, and none protruded into this cavity. Again, the thin membrane felt below the placenta may have been continued, one layer passing up the anterior abdominal wall on to the transverse bowel, and from that posteriorly to join another layer which might be supposed to pass backwards, cover the uterus and broad ligaments, and pass up the posterior wall of the abdomen.

Without the possibility of a post-mortem examination, and of the making of careful sections, it is difficult to arrive at any definite conclusion with regard to the exact relations and the history of this case.

VI.—NOTE ON THE PROBABLE POLLUTION OF A DEEP WELL BY SEWAGE COMING FROM A DISTANCE THROUGH FISSURES IN SANDSTONE.

By Alexander C. Houston, M.B., D.Sc. Edinburgh.

There are numberless cases on record of the pollution of shallow wells by sewage from leaking cesspools. In such cases the cesspool is usually situated in close proximity to and at a higher level than the well. Gravitation is frequently aided by pumping operations which depress the water-level in the well and so increase the drainage from the surrounding soil to an extent depending on the nature of the soil and the amount of the depression.

In deep wells the conditions are different as the boring passes through the superficial porous stratum and through the underlying impermeable bed, to reach water-bearing strata still deeper down. The outcrop of the water-bearing strata is usually at a considerable distance, and the water supplying the well has thus first to pass through a considerable thickness of soil. If the sides of the well as far down as the impermeable stratum are properly made so as to exclude surface water, pollution rarely occurs. In certain geological formations, however, such as the chalk and sandstone, cracks and fissures often exist, which may be the means of carrying impurities without any filtration or purification, and from considerable distances, into these water-bearing strata. It is probable that the following case is an example in point.

In Craig House grounds, at Morningside, near Edinburgh, there is a quarry, which from 1878 to 1892 received the sewage of over 25 inhabitants. This sewage in great part disappeared, as is believed, into fissures in the rock. At a point in the Myreside railway cutting, 800 feet from Craig House quarry, there existed a spring which on chemical analysis was found to yield a pure and potable water. At this spring a well was sunk 6 feet in diameter and 114 feet deep, and the water from the well was pure. Afterwards a bore 2½ inches in diameter and 180 feet deep was made, and then the water was again analysed and found to contain organic impurity. The rock between the quarry referred to as receiving sewage and the well is sandstone, and the dip is towards the well, the difference of level being about 60 feet. At the end of the year 1892 Craig House sewage was no longer run into the quarry, but was turned into the city drains, and in July 1893 the well was found to yield a pure water.

In the following Table the various chemical analyses of the spring and well waters are tabulated. The composition of the water is given in full in each case, but the remarks of the analyst are abridged, and only those are given which relate to the organic purity or impurity of the water. Briefly, the opinion of the analyst was favourable as regards Nos. 1, 2, and 6; and unfavourable as regards Nos. 3, 4, and 5.

Copy of Chemical Analyses by Mr Falconer King.

Results stated as grains per gallon.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
	"Spring," Myreside. April 1884.	Myreside well when 114 feet down. Dec. 1885.	Myreside well when 114 / 180 feet deep. April 1887.	Myreside well when 114 / 180 feet deep. May 1887.	Myreside well when 114 / 180 feet deep. Sept. 1892.	Myreside well when 114 / 180 feet deep. July 1893.
Carbonate of lime, . .	15·72	9·0	8·92	9·72	8·8	5·84
Carbonate of magnesia, .	3·32	5·7	6·97	5·62	7·35	0·78
Sulphate of lime, . .	0·39		0·48		0·24	0·83
Sulphate of magnesia, .	4·63	1·26	0·6	1·28	0·54	
Chloride of magnesium, .	2·85	2·22	2·16	2·3	0·59	0·25
Alkaline nitrates, . .	0·5	0·46	trace	none	v. ft. trace	trace
Iron oxide, ...	v. ft. trace				v. ft. trace	trace
Silica, ...	0·08	0·16	0·24	0·32	0·24	0·12
Loss by ignition, . .	4·88	4·48	4·24	4·24	4·00	1·04
Saline ammonia, . .	0·0008	0·0048	0·02	0·0224	0·184	traces
Albumenoid ammonia, .	0·0008	0·0016	0·0072	0·0064	0·0016	traces
Phosphoric acid, . .			trace	none		
Lead, ...				none	none	none
Iron, ...				trace		
Chloride of sodium, . .					1·76	
Nitrites, ...					v. slt. trace	ft. trace
Chloride of calcium, .						0·83
Summary of Remarks by Analyst bearing on the organic purity of the waters.	These two samples of water show no signs of impurity.		"As regards impurity, it is almost entirely free of nitric acid and phosphoric acid." "The albumenoid matter is not present in excess, but of saline ammonia there is certainly present an excessive amount."	". . . . It is practically free from nitric acid." ". . . . Almost the only objectionable point in its character . . . . is the large proportion of saline ammonia which it contains."	"This water is very free from albumenoid matter, and also from nitric acid, but it contains a considerable excess of saline ammonia."	"This water is very pure, being free of saline ammonia and albumenoid matter, and containing traces only of nitric acid and nitrites."

Recapitulating the main facts, the following points claim attention:—

In the first place, the spring was found to yield a pure water (Table, No. 1), showing that there was no contamination from the superficial strata whence it derived its water.

In the second place, after a well had been made at the site of the spring 114 feet deep, a pure and wholesome water was still obtained, pointing again to the absence of surface pollution, and to the absence of contamination from the deeper, but still somewhat superficial water-bearing strata (Table, No. 2).

In the third place, after the bore had been carried to 180 feet below the bottom of the well, or 294 feet from the surface, the water showed signs of organic pollution (Table, Nos. 3, 4, and 5).

In view of the fact that the dip in the rock from the supposed source of contamination was in the direction of the well, and that the rock was sandstone, there cannot be much doubt that the Craig House sewage passing down fissures in the sandstone had polluted the water-bearing strata deep down. When the well was 114 feet deep it no doubt tapped a pure source of water supply held up by an underlying impermeable bed. But when the bore was made, this impermeable bed was pierced, and a water-bearing stratum was reached, which communicated by cracks and fissures in the sandstone with distant and superficial sources of contamination, and probably, if not certainly, with the quarry into which Craig House sewage was poured.

Lastly, the above explanation of the supposed source of pollution is strengthened by the return to purity of the water some time after the Craig House sewage had been turned from the quarry into the Edinburgh town drains (Table, No. 6).

There was no way of ascertaining exactly at what depth the impure water came into the bore.

The above case teaches the useful lesson that the mere depth of a well does not necessarily afford evidence of the purity of its water. Shallow wells, no doubt, are most frequently polluted. As regards them, the source of the pollution is generally found with ease, whereas in the case of deep wells the source of the contamination may be remote and difficult to find. There are few shallow wells, however, so accessible to pollution as that some filtration and some æration of the noxious material does not take place on the passage of the material through the superficial layers of the soil. But where sewage finds its way into cracks and fissures in rock, it may pass in an almost unaltered condition for considerable distances and to great depths, and may so grossly contaminate even very deep sources of water supply.

It would be difficult to find an example of the pollution of a water-supply more likely to furnish interesting and valuable results, if a bacteriological as well as a chemical examination of the water had been undertaken. The view is steadily gaining that, while the chemical examination only, or the biological examination only, of a water yields results of value, the two together furnish far more trustworthy and valuable information. In the above case, if no deep source of pollution had existed, experiments go to show that the number of bacteria would have diminished the deeper the well was made, until possibly a water would have been obtained practically sterile. There can be little doubt that the number of bacteria in the samples of water Nos. 3, 4, and 5, would have been found to be far greater than in the samples Nos. 1, 2, and 6. Further, the character as well as the number of the micro-organisms would probably have differed in the different samples,—the bacteria in samples Nos. 3, 4, and 5, by their morphological and biological characteristics perhaps pointing to direct sewage contamination.

I am indebted to the kindness of Dr Clouston for the main facts bearing on this case, and for a copy of the various analyses given in the table.

VII.—NOTES ON AN OUTBREAK OF CHOLERA IN SARAN JAIL.

By Surgeon-Captain D. G. Crawford, M.B., I.M.S., Civil Surgeon, Saran.

Saran is one of the districts (counties) in the province of Bihar, in the Lieutenant-Governorship of Bengal. It lies on the north bank of the Ganges, in latitude 25° 31′ to 26° 31′ North, and longitude 84° to 85° 15′ East; its area is 2647 square miles, and the population, according to the census of 1891, was 2,467,477. The "sadr station," or county town, is Chapra, a city on the north bank of the Gogra river, just above its confluence with the Ganges, with a population in 1891 of 57,352. The city is some four miles long by three-quarters of a mile broad, lying between the Gogra river and the Bengal and North-Western Railway, and consists of two densely populated blocks of native bazaars, between which is a more open space about half a mile long in which the European houses and government offices are situated. The jail stands at the western end of this more open space. To its west and south the native town comes close up to it, being only separated from its walls by narrow roads; to the north is a large open space, the outer garden of the jail; and to the east lies the European quarter.

Cholera is endemic in Lower Bengal, and is almost if not quite so in Bihar, although, on the whole, much less prevalent in the latter province. In Bengal the disease follows a very regular annual cycle of prevalence. It becomes generally prevalent after the cessation of the annual rains in November, rises to a height in December, declines somewhat in January and February, greatly increases in the hot weather months, March, April, and May, usually attaining its maximum in April, falls considerably with the onset of the rainy season in June, and comes down to its minimum in July and August, increasing again somewhat in September and October towards the end of the rains. The disease is never altogether absent from the Bengal districts, though in July and August the number of deaths registered in each district may be counted in units; in March, April, and May often in thousands. In Bihar cholera is usually much less fatal, except in severe epidemics, which do not occur every year. The cycle of recurrence is also somewhat different, the disease usually attaining its maximum during the rainy season, whereas in Lower Bengal it is then at its lowest. Every district in Bihar, however, has some deaths from cholera registered every year.

After nine years' immunity, cholera appeared in Saran jail in August 1889, and has occurred, more or less, every year since. The epidemic of 1892 was, however, on a much larger scale than that of any of the three preceding years.

The site of the jail can hardly be considered a suitable one from a sanitary point of view, being situated in the middle of a large native city, with crowded streets immediately on the south and west. The ground level is low, but little, if at all, lower than that of the surrounding land. The jail was originally built in 1821–22, but of the original buildings the only ones now in use are the guard room and the hospital, the latter of which was built in 1823. The wards now in use were built in 1846–47, presumably upon the sites of older ones. They are one-storey buildings with tiled roofs, and are raised only a few inches above the ground, except the under-trial and female wards, which are raised some two feet. The prisoners sleep on beds of brick some two feet high, except in the hospital, where they have iron bedsteads. The wards are built in three rows from north to south, the middle and eastern rows being close together. Wards 1 and 2 were formerly worksheds, being converted into sleeping barracks in 1890 and 1891 respectively; ward 3 is a storeroom, and has never been used as a barrack.

The capacity of the jail is 331, but for some time past it had been considerably overcrowded, especially in May and June 1892. In June the smallest number of prisoners locked up was 11·45 per cent., while the maximum number was no less than 22·35 per cent. above the nominal capacity of the jail, which is calculated at 36 square feet and 540 cubic feet per man. Saran is considered a healthy jail. In those which are usually unhealthy the space per man is laid down at 50 square feet and 750 cubic feet.

With three exceptions, 1, 2, and 9, one or more cases of cholera occurred in each of the fourteen wards in the jail. It is evident, therefore, that the cause of the outbreak could not be found in any local insanitary condition of any particular barrack. Moreover, the wards which were free from the disease differed in no respect from the others, except that wards 1 and 2, having only recently been converted into sleeping barracks, had only been occupied as such for two and one years respectively, instead of for forty-five years as the others had been, including No. 9, which was also free from the disease. The numbers of the cases contributed by the various wards were as follows:—

Ward No. 1	0	Ward No. 9	0
„ „ 2	0	„ „ 10	1
„ „ 3 (storeroom)	0	„ „ 11	1
„ „ 4	2	„ „ 12	4
„ „ 5	3	Hospital	4
„ „ 6	3	Under-trial Ward	3
„ „ 7	1	Female Ward	2
„ „ 8	2	Civil Ward (Empty)	0

There were also the four cases in camp.

It is rarely the case in India that an outbreak of cholera can be traced to a definite source, especially when the disease is prevalent throughout the neighbourhood. And in the case of Saran jail we were not more fortunate than usual in this respect. It was not possible to say definitely how cholera was introduced into the jail, though after a careful consideration of the various circumstances affecting the prisoners, conservancy, water supply, and labour, my own opinion was in favour of the drinking water being to blame for the outbreak.

In India it has long been recognised that, after the outbreak of epidemic cholera among a body of men, the best means of saving the majority from the disease is to abandon the infected place. For many years past it has been a standing order that troops among whom cholera has broken out, should go into camp as soon as the disease becomes epidemic, and if attacked in camp should pass on to camp at another site, if possible marching at right angles to the prevailing wind, and if necessary this must be done time after time. The good effect of shifting camp was noted so long ago as 1774, by Dr Paisley, of the East India Company's Army.[1] And the Marquis of Hastings, in whose camp occurred the great historic epidemic of 1817, records in his diary the great diminution of the disease which followed rapid movement from the spot where the disease first broke out.[2] Within the last few years orders have been issued that bodies of convicts, when attacked by epidemic cholera, should, like troops, camp out immediately. And two sites, to be used if necessary as cholera camps, have been acquired for each jail in Bengal and Bihar.

The main body of the convicts in the jail were marched out into camp on the morning of July 11th, about 25 per cent. being left behind. The cholera cases could not be moved into camp, though those in hospital for other diseases were taken in carts; a certain number of other prisoners had to be left to help in taking care of them, also for cooking, conservancy, etc.; the female prisoners could not be taken, owing to the difficulty of guarding and of separating the two sexes in camp; and the under-trial prisoners had to be left behind, as some or other of them were called up for trial in court almost every day. Also there were at the time a number of transportation and other long-term prisoners in the jail, who were kept there on account of the extra facility for escape from an unfenced camp. As it was, two prisoners with sentences of four years managed to escape from the camp. The total number taken into camp was 278, while 95 were left in the jail.

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[1] *Annals of Cholera from the earliest periods to the year* 1817, by Inspector General John Macpherson, Bengal Army, 1892, p. 134.

[2] *A History of Asiatic Cholera*, by C. Macnamara, 1876 (p. 50). This book, like Macpherson's Annals, is a perfect mine of information on the subject.

The camp was pitched at a place called Godua, 4¾ miles west of the jail, on a fairly raised site, with a good water supply from a fine well. The prisoners were kept in fourteen tents, pitched in two parallel rows, each having room for 20 men. Small platforms of bamboo, raised about a foot from the ground, were provided for the prisoners to sleep on, and with a plentiful supply of straw and blankets, they were made as comfortable as possible. The ground also was well drained by trenches cut so as to carry off rainwater almost as fast as it fell. Tents for the guard were pitched at each side of the camp. Three tents, at the S.W. corner, were set aside as a hospital for ordinary cases, and another tent was pitched some hundred yards to leeward of the camp (west), as a hospital for cholera cases. The native medical subordinate attached to the jail went out into camp with the prisoners, and I visited them twice daily. The camp was maintained until 27th July, or ten days after the occurrence of the last case of cholera. During this time the ordinary weather of the rainy season was experienced,—damp, muggy, cloudy days, with heavy rain, and intervals of hot sunshine. Luckily the tents remained waterproof throughout. On 27th July the prisoners in camp were marched back into the jail. The numbers in camp had fallen during the seventeen days—by deaths (5), releases (33), and escapes (2)—from 278 to 238, while in the same time the numbers in jail, in spite of a few releases, had risen by new admissions from 95 to 123. During the absence of the bulk of the prisoners in camp, the buildings in the jail were thoroughly disinfected, sulphur being burnt, with closed doors, in all the wards, the floors and walls being thoroughly scraped, and afterwards repainted or tarred, and all the wood and ironwork painted with a strong solution of phenyle.

In Bengal proper, where cholera is almost always at its minimum during the rains, the prisoners may be camped out in comparative comfort. But the case is different in Bihar, where cholera is at its worst during the rainy season. Living under canvas at this time must necessarily cause, at best, great inconvenience and discomfort to those who have to do it, and may give rise to a great increase in other diseases, such as dysentery and malarial fevers. There was a good deal of sickness among the prisoners in camp, chiefly diarrhœa of a mild type. But on the whole, I do not think they suffered much from exposure, though of course camping in the rains is simply a choice of the lesser of two evils. The move into camp was fairly successful in getting rid of the disease. It is true that there were five cases of cholera in the camp and two among the prisoners left in jail, and that five of these seven cases were fatal. But in the four days previous to going into camp, between 2 P.M. of the 7th July and 6 A.M. of the 11th July, there were no less than 19 cases. There was also a considerable diminution in other forms of disease from the 11th to the 31st, as compared with the numbers admitted to hospital between the 1st and 11th.

In an Indian jail conservancy is usually well carried out. There are no sewers to get out of order. The drains are only surface drains, usually uncovered, carrying off storm water only. The prisoners are usually marched in a body to the latrines thrice daily, once after each meal, in the early morning, at mid-day, and in the evening. The latrines are afterwards cleaned by hand by prisoners of the sweeper caste, and their contents, mixed with dry earth, are at once carried out in closed iron buckets, and deeply buried in trenches in the garden. The urine is disposed of in the same manner. This work was done in Saran jail by "Doms," men of a tribe which might be described as below the caste system altogether, and which is only found in a few districts of Bihar and the North-West Provinces. They have no caste scruples, and will eat anything in the way of food, being usually, when at liberty, very dirty feeders. The night-soil was at this time trenched near the northern end of the outer garden, on the north of the jail, and some 200 yards distant from its wall. The place where the trenches were dug of course was changed from time to time, new trenches being dug as the old ones were filled, and in course of time the ground covering the latter was cultivated.

The water suppy of the jail, up to December 1891, was drawn from a well in the centre of the hollow square formed by the kitchen and feeding platforms. In that month the Inspector-General of Jails, owing to cholera having occurred in the jail during 1889, 1890, and 1891, ordered that the use of this water should be discontinued, and that water should be taken instead from the Gogra river, which passes by Chapra town. This river, in the driest season, is 500 or 600 yards broad, and is said to be 40 feet deep. It then just touches the town at its lower or east end. In the height of the rains the breadth of the river is some two miles, and its depth some 20 feet more than in the hot season. At this time the stream runs along the whole southern side of the town, from west to east. This river water, accordingly, had been in use since December 1891, except for the four days 27th to 30th June, when water from the kitchen well was used. These four days cover the date of the outbreak of cholera. It was not, however, to the well water, but to the river water, that I am inclined to attribute the epidemic in the jail. River water is usually at its very worst during the first rise of the river at the beginning of the rains, which was exactly the state in which the river was at the end of June. For the first heavy rain washes down from the banks into the river all the impurities, human or animal, fæcal or otherwise, which have been accumulating on these banks for the past six or eight months. And as the same applies to every tributary nook and stream, the beds of most of which have been dry for months past, and while dry have been used as the general public latrine of every village on their banks, the amount of pollution which must in this way pass into every large river must be something enormous. When the river comes into full flood, towards the end of July in this part of the country, the quality of the water improves, as the huge volume of water passing down must have long since carried away the accumulated filth of the dry season, and also largely dilutes what impurities it may receive from day to day. The water, however, which was brought up from the river to the jail in iron watercarts, was not tempting at the best of times. It was very dirty, in fact quite opaque, and had to be passed through two settling tanks, in which it was treated with alum to precipitate the suspended mud, before it was ever filtered. After filtration through sand and charcoal it was usually fairly clear, and was free from all unpleasant smell and taste. This river water was again used from the 18th July on, except for the seventeen days the bulk of the prisoners were in camp. During that time the prisoners remaining in jail again used the water of the kitchen well.

The causation of cholera has probably been the cause of more argument and discussion, and of more widely different views, than that of any other disease, at least within the present century. At one time the question of contagion was much disputed. Then it was hotly argued whether the disease was spread by unknown atmospheric and meteorological conditions, or by human intercourse. The former was understood, some years ago, to be the official view of the Government of India. The latter, however, has come to be generally accepted. Cholera follows the routes by which men travel, and does not travel faster than men can do. Prior to the introduction of railways and steamers its progress was slow; as the rapidity of human intercourse has increased, so has the march of cholera become more rapid. The manner in which cholera spreads by human intercourse is probably that the cholera poison contained in the evacuations gains access to the alimentary canals of other people. The most frequent manner in which this takes place is through contaminated drinking water; but it may also be conveyed by any contaminated article of food, either fluid, such as milk, usually diluted by tainted water; or solid, such as rice, with which the poison has came in contact. In the same way the poison may be conveyed by the hands of the recipient to his mouth, either directly or through articles of food, or similarly to others coming in frequent contact with him; and in this way the disease may be conveyed to other members of his family by a person in attendance on the sick who remains unaffected himself. So also the poison may be conveyed by clothing soiled with the evacuations. It is easy to understand how such clothes, in washing or otherwise, may convey the poison first to the hand, and then to the mouth and stomach, of any one touching them. This, again, might convey the poison from the evacuations to food. The extreme difficulty, indeed impossibility, of tracing the infection back from case to case, when cholera is extensively prevalent, has probably been the cause of the support given to the meteorological theory. But in a few cases the chain of infection has been successfully traced back, *e.g.*, in the case of an outbreak on board the ship "Ardencluthа" in the Hughli river, reported by Dr W. Simpson, Health Officer of Culcutta.[1] We can hardly deny the *possibility* that cholera may be propagated in other ways; but that the above is the usual manner in which the disease is spread is now, I think, almost universally admitted In the words of Ernest Hart, "We eat cholera and drink cholera, but do not 'catch' it."[2]

(*To be continued.*)

VIII.—AN ANALYSIS OF TWO HUNDRED CASES OF CATARACT EXTRACTION.

By **Ernest F. Neve**, M.D., F.R.C.S. Ed., Surgeon to the Kashmir Mission Hospital.

The following is an analysis of cases operated upon in the Mission Hospital[3] during a period of six years ending in July 1893.

(1.) Selection of Cases.—Favourable and unfavourable are included, the notes being consecutive, with the exception of traumatic cataract, which I have left for separate consideration. It will be seen that we have gone far in the direction of operating sooner or later on every patient who presented himself, although several suffered from complications which would usually be held to contraindicate operative procedure. Our rule has been to extract in every case where vision was seriously affected by lens opacity, provided that perception of light was present. Some exceptions have occurred in which the eye was in such a condition from granular lids, trichiasis, or pannus, that a successful extraction would have given but little vision, while the risk of failure appeared disproportionately great. On the other hand, it will be seen that many suffering from one or other of these affections were treated with success. Cases of incipient cataract are told to return when they can no longer count fingers. In cases of partially mature cataract with imperfect vision we have found that to put off a patient is apt to shake his confidence. So we have often been obliged to operate before the lens was ripe. In the case of bilateral cataract, however, if one side was mature, that side was operated upon and the patient instructed to return at a later period for the second operation,—the promise of a pair of cataract spectacles facilitating the arrangement.

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[1] *British Medical Journal*, vol. ii., 1887 (9th July), p. 82.

[2] *Ibid.*, vol. ii., 1892 (3rd Sept.) p. 562.

[3] About half of the cases were operated on by Mr A. Neve.

(2.) CLIMATIC AND RACIAL INFLUENCES.—I shall not enter into these, as they have been discussed in an interesting paper by Surgeon-Major Freyer,[1] many of whose remarks are equally applicable to Kashmir. I would only observe that the prevalence of ophthalmic disorders in the East, and the ignorance and obstinacy of many patients, shown in deliberately pulling off their bandages and perpetrating all sorts of wild irregularities, constitute a serious bar to the attainment of a high degree of success. When they have recovered their sight, patients are anxious to leave hospital at once. And it is impossible to follow up most of the cases, so that in estimating results it must be remembered that many patients who three or four weeks after operation have but poor vision, continue to improve; while, on the other hand, the number of those who having good sight already within a month of operation lose it subsequently, would be extremely small.

(3.) SEX.—One hundred and thirty-seven operations were on males, and sixty-three on females.

(4.) THE DURATION OF STAY IN HOSPITAL of each patient was, on an average, twenty days.

(5.) VARIETY OF CATARACT.—Hard senile, 160; hard and soft, (including Morgagnian), 26; soft, 7; diabetic, 5; black, 2.

In forty patients in whom mature or nearly mature cataract existed on both sides, first one lens was extracted, and then after an interval of one or two weeks the other side was operated upon. There is a very real risk of septic infection with suppuration if an eye is operated upon after it has been tied up for a week or more. Before operating on the second eye it should be exposed to the air for some days and treated with mild astringents and antiseptics. Probably the safer course in bilateral cataract, where it is desired to operate upon the second eye quickly, is, after the first extraction, to bandage only that eye which has been operated upon.

(6.) PREVIOUS CONDITION OF THE EYE.—(*a.*) *Disease.*—Eye irritable and watery, or other signs of conjunctivitis, 37; granular lids, 23; blepharitis, 3; entropion, 3; minus tension, 5; former iritis, 5; atrophy of optic nerve, 2. In addition to these, there were two cases in which the disease was only recognised subsequent to extraction—viz., one case of partial retinal atrophy, and one of haziness of the vitreous. What was the result of operation in these 80 unhealthy cases? Of the 37 eyes with conjunctivitis,

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[1] "Observations on Cataract in India," *The Lancet*, vol. ii. p. 313, 1879.

in 21 the result was good, in 11 fair, 4 not improved, while one patient left hospital, and the result is unknown. Granular lids: good, 14; fair, 4; poor, 5. Blepharitis: good, 3. Entropion: good, 2; fair, 1. Minus tension; good, 3; poor, 2. In two of the diabetic eyes there was diminished tension. Both did well. Former iritis: fair, 1; not improved, 1; poor, 3. In the case not improved there were also thin blue-looking patches on the sclerotic, and minus tension. (*b.*) *Appearance of Lens.*—In two cases there were patches of localized thickening of the anterior capsule. In one of these, the vision, although improved, was poor, owing to the fact that there was haziness of the vitreous. In four cases there were white calcareous-looking patches or spots in the lens visible on focal illumination. One of these was not improved, owing to subsequent iritis. The other three were successful. In two cases of tremulous lens the resulting vision was respectively good and fair. In a large majority of the cases the lens presented a characteristic appearance of radiating striæ. In the rest the appearance varied greatly—in some it was amorphous and milky, in others flocculent, opalescent, satin-like, segmented, or streaked. (*c.*) *Previous Vision.*—With one exception, perception of light was present in every case. The exception was a patient with double cataract. He pressed for operation, in spite of the fact that he was told that there was little hope of improvement. The extraction was successful, but optic atrophy was disclosed.

(7.) OPERATIVE TREATMENT.—(*a.*) *Antiseptics.*—In unhealthy eyes appropriate lotions were used for some days prior to operation. All instruments were placed in a 4 per cent. solution of carbolic acid, and subsequently in a saturated solution of boracic acid. The cocaine, atropine, and eserine drops are made with boracic lotion (recently 1 in 6000 perchloride of mercury lotion has been used in preference). The patient's face, eyelids, and conjunctival sacs are cleansed with carbolic and boracic lotions. The operator's hands are rendered aseptic. During the operation intermittent extraocular irrigation is carried on with boracic lotion. Salalembroth wool, and (recently) the double cyanide gauze are used as dressings. (*b.*) *Incision.*—One hundred and forty-three eyes were operated upon by Von Graefe's incision, fifty-four by a modified flap; in four a small incision was made. In one case of pannus I made the section of the cornea below. We do not practise discission for soft cataract, as it is not suited for Eastern countries, where the people are apt to be impatient, and leave hospital before vision has been restored. In seven cases, immediately after the incision, the cornea fell in and became concave. In all these cases there was marked arcus senilis, which is, I believe, one cause of this tendency, owing to an associated thinness of the cornea. The use of cocaine, perhaps, favours the concavity. This falling-in of the cornea appears a bad omen. For of the seven cases, four were unsatisfactory; one was not improved, owing to iritis; in two the result was poor, and in one fair. In three of these cases there was, however, in two cases slight granular lids, and in the other irritable conjunctivitis. (*c.*) *Iridectomy.*—In twenty-four cases a preliminary iridectomy was performed some days before the extraction. This is, I believe, a measure of great value, if, for any reason, suppuration is apprehended. And I believe that here, where we so often have to deal with unhealthy eyes, more improvement in results may be anticipated from increased frequency in the performance of preliminary iridectomy than from any other precaution I know of. It is, however, very important that a sufficient time should be allowed to elapse after the iridectomy (and consequent bandaging) for the conjunctiva to have recovered its tone. And to this end the use of boracic lotion greatly contributes. Unfortunately there is always the risk of the patient running away before the second operation, viz., the extraction. In thirty-three cases no iridectomy was performed. In three of these prolapse of the iris occurred. In one of these the other eye had been treated successfully without iridectomy, and the second eye presented no difficulty. Eserine was used after the operation, and the pupil was well contracted, but at the first dressing the iris was found to have prolapsed. The protruding portion was snipped off, and the final result was very good.

In eight of the operations without iridectomy, the upper part of the iris became adherent to the corneal cicatrix. In two there was no improvement to sight, owing to iritic blocking of the pupil. No doubt, in simple cases, extraction without iridectomy is the ideal operation. In a large proportion of cases this can be cautiously tried at first. If, on account of any difficulty in extraction, or tendency to prolapse of the iris, iridectomy appears called for, it can be performed at any stage of the operation. A universal application of the extraction without iridectomy will, I feel sure, increase the percentage of failures.

(*d.*) *Lens.*—In thirty-five cases the lens was unusually large. In three it consisted of laminated flat opaque scales. In twelve cases the cataract was of the Morgagnian variety. (*e.*) *Intra-ocular irrigation.*—This was performed in forty-one cases. It is a procedure of much value in the treatment of cases in which the cortex, whether from immaturity or some other reason, cannot be easily removed by ordinary methods. Our attention was first drawn to the subject by a paper of Dr M'Keown's.[1] The apparatus which we use is extremely simple—a glass funnel, indiarubber tubing, and the metal nozzle and glass tube of a suction curette. Boiled filtered water is used, and the requisite force of a current can be obtained by elevating or depressing the funnel. The nozzle is inserted just sufficiently far to secure the formation of a current throughout the anterior chamber. The way in which sticky adherent cortex can be visibly washed out is most instructive.

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[1] *Brit. Med. Journ.*, vol. ii. p. 238.

Extra-ocular irrigation is also of great value, and is often so effective as to render the introduction of a nozzle into the anterior chamber unnecessary. If water or boracic lotion is syringed with moderate force, and at a suitable angle, against the site of the section, the lips of the wound separate and cortical matter can be gently washed out. Small masses, previously unsuspected, often come into sight and escape from the wound in the current thus set up. (*f.*) *Accidents and Complications.*—In four cases some bleeding took place into the anterior chamber. Loss of vitreous occurred in three cases. In one of these it followed the removal of the lens (tremulous) with the scoop. In another case the vitreous was fluid, the tension minus, and the eye had been damaged by an attempt to extract by a previous medical attendant. In ten cases a bead of vitreous presented at the wound. In most of these it was due to straining. In some there was no obvious cause. A very peripheral incision predisposes to it. A preliminary iridectomy done some months before increases the tendency, I believe.

In one case—an eye of minus tension—dislocation of the lens took place during the incision, and after the iridectomy the anterior chamber filled with blood. The lens could not be seen or felt. The eye healed up without bad symptoms. Perception of light was present when the patient left. I fear subsequent trouble. In seven cases the scoop was required. In three of these there was no show of vitreous. A hook was used for extraction in twelve cases. In six of these there was no appearance of vitreous. (*g.*) *Inflammatory Sequels.*—In four eyes panophthalmitis occurred. In twenty-nine there was iritis. Of these, in three the pupil was blocked, in one the iritis became chronic, and in fifteen it was only slight.

8. GENERAL RESULTS.—Stated according to conventional methods, the results were: Successful, 184; failures, 11; left hospital, 5. Of these last, two ought probably to be added to the failures. Of the 184 successful cases, in 136 the vision was very good; in 33 fair, and in 15 poor. By fair vision I mean finger counting at less than 12 feet, and by poor vision, finger counting at less than 6 feet. The sight was usually tested a fortnight or three weeks subsequent to operation, immediately after the final removal of the bandages. Of the eleven cases not improved, in four there was panophthalmitis, two blocked pupil, three iritis, and two optic atrophy. It is right to mention here that the operation of preliminary iridectomy is not altogether free from risk. In one case it was followed by panophthalmitis. It is an important question with regard to cataract extraction as to how far a surgeon is justified in refusing to operate from the fear of partial or complete failure. No doubt, by a careful selection of cases, the operator's

reputation is enhanced. But it cannot be ethically correct to condemn a patient to irremediable blindness when there is a reasonable chance of improving (even if not restoring) his sight by operation. It is hoped that as a contribution to this subject the present analysis may not be without interest.

IX.—THE DEVELOPMENT OF THE EDINBURGH SCHOOL OF MEDICINE. An Introductory Lecture delivered to the Class of Physiology at Surgeons' Hall, on October 9th, 1894.

By D. Noël Paton, M.D., F.R.C.P. Ed.

Experience has taught me that it is useless to begin the regular work of the class at this our first meeting. I regret this the less, because it affords me an opportunity of saying a few words to you upon a subject which ought to interest every student in a great Medical School like ours, namely, on the origin and history of the School. And I feel that the present is a specially appropriate date for such a retrospect, for, as I shall presently tell you, the second birth of the School took place in this month just two hundred years ago.

The Edinburgh Medical School is a large and complex body very difficult to understand, unless in the light of its development. The relationships of the University, the Royal Colleges of Physicians and Surgeons, and the School of Medicine, Edinburgh, can only be comprehended when their collateral growth and the influence they have exerted on one another are considered.

To students at Surgeons' Hall the history of the Edinburgh School should be doubly interesting, because it was in connexion with the College of Surgeons that the School was founded, and in connexion with the College of Surgeons it has had a continuous existence since its foundation.

In the short time at my disposal I can do no more than bring before you some of these outstanding features in the progress of the School, which will enable you to understand how the various parts, in the University and outside it, are related to one another.

We find the first record of the foundation of the School in the Deed of Cause which the Corporation of Surgeon-Barbers obtained from the Town Council of the City of Edinburgh in 1505.

In these remote times the occupation of the surgeon-barber was rather of the nature of a trade than of a profession. As in other trades, so here entrance was obtained through an apprenticeship, and when the aspiring youth's term of apprenticeship was over he was supposed to have mastered the arts of shaving, bleeding, and binding up wounds, and he blossomed forth a fully-fledged surgeon-barber, with the rights and privileges of the Guild.

But some of these old barber-surgeons had commenced, even in 1505, to feel the necessity of a knowledge of anatomy, and they therefore asked and had granted to them the right to acquire "Anis in the year ane condampnit man efter he be deed to mak anatomea quhair thro" that they might "have experience. Ilk ane to instruct uthers." This, in the light of modern educational methods, may seem a poor commencement for a great School. But great things must have small beginnings, and considering the times in which this request was made and granted, it shows a scientific zeal and a desire for real knowledge which is highly creditable to the petitioners, and a sound common-sense on the part of the Town Council, which we would hold up for emulation by their successors in office.

To appreciate this you must consider the state of Edinburgh and of Scotland, and you must consider the state of medical education throughout Europe at that time.

Edinburgh was a small walled city occupying only the ridge leading from the Castle to Holyrood. In the present day a town of such dimensions would rank as no more than a village. The rest of Scotland was but little civilized. The North was occupied by the wild highland clans, while the Lowlands were in the possession of the feudal chiefs, who made war on one another, and kept the country in a state of constant turmoil.

It is true that the commencement of the 16th century had this advantage over its later years, and over the whole of the preceding century, that there was peace with England, and that the throne was occupied by the gallant James IV., who afterwards fell at Flodden. James was certainly the most brilliant of his line, He was a man of culture, deeply interested in the progress of his little kingdom, and it is said that he himself had studied medicine and surgery. Apparently he also practised, but obviously for his own instruction or delectation, for instead of receiving he seems to have paid a fee. In the list of the expenditure of the Lord High Treasurer in 1511, we find "Item to ane fallow, because the King pullit furth his twtht xiiii s.," that is, 1s. 2d. sterling! Under his administration the trade and prosperity of Edinburgh and of Scotland generally had steadily advanced, while the constant communication with France, which was allowed by the peace with England, was introducing new ideas from the Continent.

But indeed, the stimulus which such communication was able to give to medical education and to the study of Anatomy was small indeed. For in Paris and in other Schools the great awakening of learning which has made the 16th century so famous had hardly yet commenced The art of printing was not a century old, and it is calculated that before 1500 only eight hundred medical books had been printed. Medical education had advanced but little since the days of Galen. In fact, the instruction given in the Continental schools consisted chiefly in the reading of the works of Hippocrates, Galen, and Avicenna, and of their commentators, with an occasional demonstration on the anatomy of an ape, dog, or pig, or more rarely of the human subject. The Catholic Church had opposed itself to the dissection of the human body, and hence the opportunities for anatomical study were few. But no idea of independent observation, no notion of differing from the great authorities of antiquity, was to be found in the Schools. A knowledge of authorities was all that was required of the student at his examinations. And at this period the reputation of examinations was as low as it ever has been. In 1502 a complaint was made that "horse dealers, traders in cattle, and other common people who have not the slightest acquaintance with Aristotle, and are ignorant of even the first elements of grammar, obtained the title of Magister in the philosophic faculty of Paris."

Had I time I could tell you some interesting tales of the mode of conducting examinations in these days.

In Padua the candidates were allowed to bring with them an assistant, who whispered in their ears the answers to the questions, while at another school the convenient practice of supplying the students with the questions and answers before the examination was practised.

In England there was at this time practically no medical teaching. The great monasteries had founded hospitals, some at a very early date, and it is possible that in Oxford and Cambridge some instruction in the works of the great authorities of medicine was given. But in England real medical education does not appear to have taken any position until the 17th century.

So you see that this important step on the part of our forebears is rather to be ascribed to the sound good sense of the old Scotch surgeons than to the influence of advances in other countries.

The years which followed the granting of the Deed of Cause in 1505, and its ratification by James IV. in 1506, were among the most troublous in the troubled history of Scotland. War with England broke out, and the battle of Flodden was fought and lost in 1513, and then came the Regency, with the wild feuds between the Douglases and Hamiltons. During the brief reign of James V. the country again enjoyed a few years of comparative quiet, but with his death, with the progress of the Reformation, and with the accession of Queen Mary, it was again plunged in trouble. All through her unhappy reign little peace was enjoyed, and it is not to be wondered at that no records of the doings of the surgeons during this period are preserved. Let us hope that amidst all this turmoil they continued to "mak anatomea of their condampnit man at least anis in the year," and to give sound instruction to their apprentices. Let us hope that the four trusty surgeons who, in 1542, were sent to "bourderis for curing of all personis that happnit to be hurt by the Inglis menne," had profited by that instruction, and were well qualified to treat the spear thrusts, sword cuts, and arrow wounds inflicted on their countrymen.

It is not till 1694 that any authentic record is to be found of medical teaching in Edinburgh. But the fact that in that year—two hundred years ago this very month—Alexander Monteath, a member of the Corporation of Surgeons (for the barbers had now been dropped by their more aristocratic brethren), applied for and obtained from the Town Council a gift of "those bodies which dye in the correction house" and of "the bodies of fundlings that dye upon the breast," seems to indicate that the teaching of anatomy had been developing. Three years afterwards the Corporation of Surgeons completed their Hall, in which was an anatomical theatre, and in this theatre instruction in anatomy was given, at first by the members of the Corporation, and afterwards by teachers or professors specially appointed by the Corporation.

This is the true foundation of our School, and since that time it has steadily developed. For this second birth of the School took place under conditions most conducive to growth and development. During the 16th century the light of the Renaissance and of the Reformation had swept over Europe, driving before them the gloom of the Middle Ages with its abject respect for authority, and fostering the growth of independent thought and observation. Every art and science had participated in the movement. In Anatomy the advance had been enormous. Throwing off the shackles of blind fidelity in Hippocrates, Galen, and Avicenna, Vesalius, Eustachius, and Fallopius had commenced to dissect and observe for themselves, and had changed the whole aspect of the science. Ambroise Paré had *made* the science of surgery by his disregard of the ancients, and by his careful observations and bold experiments in treatment; while Paracelsus—the genius and quack—had advanced medicine by throwing to the winds the old and absurd theories which had for centuries hampered any rational practice.

As a result of the advances of these pioneers, in the next century the science Physiology had its birth, and in 1628 Harvey communicated his researches on the circulation of the blood, while Malpighi and Leeuwenhoek made their great discoveries on the minute structure of the body.

By the end of the 17th century the means of communication between various countries had vastly improved, and Scotchmen habitually studied at the Continental Universities, bringing back with them the scientific zeal engendered by the great teachers abroad.

It is not to be wondered at that at this period a move was made to found a Medical School in Edinburgh, and it is to the everlasting glory of the Royal College of Surgeons that it was they who founded a School which has done so much for the advancement of medical science through the last two hundred years.

The School founded in 1697 grew, and in 1720 various other departments of medical science were taught in the theatre at Surgeons' Hall, certain of the teachers being Fellows of the College of Physicians.

So you see that before any Medical Faculty existed in the University, at Surgeons' Hall there was a School well equipped according to the ideas of those days. Our so-called Extra-Mural School is older than the Medical Faculty of the University, and, indeed, as I shall now show, was the parent of that Faculty.

In 1722 Dr Alexander Munro, then Professor of Anatomy in the College of Surgeons, was appointed Professor in the University by the Town Council; but for three years he continued to conduct his classes at Surgeons' Hall. In 1725 he removed to the College. It is rumoured that his removal was caused by certain difficulties as to the source of the bodies introduced into Surgeons' Hall.

In the beginning of 1726 the various teachers at Surgeons' Hall applied to the Town Council—then the Patrons of the University—to have their departments taught in the "College," and as a result they were constituted Professors of Medicine in the University. At the same time the University was authorised to confer degrees in Medicine, and its Medical Faculty was thus the offspring of the School at Surgeons' Hall.

How that offspring flourished you all know; but it should be remembered that it owes its present high position to the character of the men who founded it, and to the outstanding ability of some of its earlier teachers. A Faculty which, within a half-century of its foundation, included among its members such men as Munro, Cullen, Black, and Gregory, requires to offer no further explanation of its prosperity.

In giving birth to this flourishing child the parents—the Corporation of Physicians and Surgeons—had not exhausted their vitality as teachers of medicine, and we find records of courses of instruction given by the Fellows of these two Corporations in Surgeons' Hall, and in other rooms all through the 18th century. As the Medical Faculty in the University grew, so also did the mother School. Indeed, it is difficult fully to appreciate the important influence these two Schools have had on the growth of one another. The degree of the University, and the fame of the Edinburgh teachers inside and outside the University, attracted students to Edinburgh, and if an inefficient Professor existed, an outside teacher was always there to give proper instruction in that department. But at this period the student was not allowed to take any course qualifying for a University degree except with the University Professors, and the present right of students to take a certain number of classes with teachers outside the University was secured in this way.

Early in the 19th century the mighty men of the Medical Faculty of the University had passed away, and their places were occupied by less distinguished successors. Some of these were notoriously inefficient,—yet students were compelled to pay them, and again to pay the outside teachers for proper instruction.

As a result the Medical School rapidly decreased, and, to save it from extinction, the Town Council, as Patrons of the University, determined to allow students to study under the teachers of the Colleges of Physicians and Surgeons, as well as under the Professors. But this decree of the Patrons of the University was resented by the very men who were destroying the School, and the Professors fought the matter in the Court of Session and in the House of Lords, and it was only in 1847 that the latter body decided in favour of the Town Council. It was only then that students were allowed to take a certain number of their classes with outside teachers.

But again the star of the University was in the ascendant. The school of the Physicians and Surgeons had given such men as Goodsir, Bennett, and Alison, to strengthen the teaching staff of the University. Simpson, Charles Bell, and Christison had also joined the Professoriate. It is not easy to say how far the reputation of such men, and how far the extended freedom to students in regard to their choice of teachers, is responsible for the rapid growth of the Medical School during the last fifty years. The growth has been enormous, for during that period the number of medical students has nearly quadrupled.

But the most extraordinary increase has taken place in the School outside the University. In 1848, when the premises in which we meet to-day were built, the number of teachers was only about a dozen, and all, with one exception, were accommodated within this building. At the present time the number of teachers has risen to sixty, and they have spread from the centre to find resting-places in many different lecture-rooms. And the number of students attending some of these teachers rivals, if it does not exceed, the number attending the corresponding University Professors.

I trust you can now understand the relationship of the various medical bodies in Edinburgh.

First in point of antiquity, and first in credit as the founder of medical education in Edinburgh, comes the Royal College of Surgeons,—a body which for nearly four hundred years has had the right of licensing practitioners of surgery, and which still continues to exercise that right. Second comes the Royal College of Physicians, founded in 1681, and having the right to grant licences to practise medicine. These Colleges, in conjunction with the Faculty of Physicians and Surgeons of Glasgow, now grant a conjoint licence, which carries a qualification in medicine, surgery, and midwifery.

The Fellows of these two Colleges have, perhaps since 1505, certainly since 1697, taught the various branches of medical science in Edinburgh. At present all such teachers in qualifying subjects are specially examined and licensed by their Colleges. Up to 1871 these teachers were directly under the ægis of the College, and the bills issued at the commencement of each session were headed "Royal College of Physicians and Surgeons," and signed by the President or Secretaries of the Colleges. In 1871 a silly squabble severed the direct link between the Colleges and their teachers; but it is earnestly to be hoped that in the near future this breach will be repaired, and that the Colleges will again connect themselves with the School which they founded and fostered through so many generations.

The School of Medicine, Edinburgh, is the direct descendant of the School in the old Surgeons' Hall. It is this School which supplied the first teachers to the University, and which has again and again given Professors to the Medical Faculty, so that of the present twelve Professors in the Faculty no less than six were previously teachers in this School; and, in the bad days of the University, it was this School which saved the Medical School of Edinburgh from extinction.

Lastly, we have the Medical Faculty of the University, founded in 1726. Since that date the University has granted medical degrees, firstly only to students studying under its professors, but since 1847 to students who have taken a certain number of their classes with other teachers.

The new ordinances of the University allow students to take one half of their classes, and all their clinical classes, with teachers in the School of Medicine, Edinburgh, recognised by the University Court.

[I am indebted to the essays of Dr John Gairdner, and to *Emeritus* Professor Struthers, who was the moving spirit in the reconstruction of the Surgeons' Hall School in 1848, for information in regard to many points in the history of the School.—D. N. P.]

Part Second.

REVIEWS.

A Treatise on Diseases of the Skin, with Special Reference to their Diagnosis and Treatment; including an Analysis of 12,000 *Consecutive Cases.* By T. M'Call Anderson, M.D., Professor of Clinical Medicine in the University of Glasgow. Second Edition, Revised and Enlarged, with Plates and numerous other Illustrations. London: C. Griffin & Co.: 1894.

In the seven years which have elapsed since the first edition of Professor M'Call Anderson's *Treatise on Diseases of the Skin* appeared, the activity manifested in the investigation of everything relating to dermatology has been very remarkable. During that time, a high-class journal devoted to this particular branch of medicine has been started in Britain, and now in the sixth year of its existence more than maintains its earlier reputation. The older Continential periodicals have grown larger, while several new ones have been founded. Various works of much excellence, both monographs and of a general character, have been published. Ten parts of an *International Atlas*, and several of a British one, representing integumentary disorders, have emerged from the press. Thus a large mass of new contributions to cutaneous literature has arisen, and this we would expect, in great measure at least, to find sifted and arranged in the volume before us. As far, indeed, as relates to the *International Atlas*, an epitome of its contents has been provided as an Appendix by Dr Thomas Bryce. Yet on comparing—which we have done with considerable care—this second edition with its predecessor, we are forced to the conclusion that the increase in size is much more due to fresh articles than to large additions made to, or extensive alterations interpolated with, the old material. That what has been done in the way of emendation has been well done goes without saying; but this only causes us to regret all the more that the process of re-casting which was inevitable after the lapse of so many years, has not been carried out more fully. Indeed, notwithstanding the statement in the preface, it would almost seem as if the original matter has, in a good many instances, not been read over with sufficient care; otherwise it is unaccountable how events are spoken of in both editions alike, and in identical words, as having recently occurred. Dr Anderson is an ardent admirer of Hebra, quoting freely from his writings, and the teaching of that pioneer of dermatology still greatly colours the opinions he holds and expresses. A large number of the illustrative cases are drawn from the earlier years of Dr Anderson's practice, a much smaller proportion from the later. One of the vexed questions of the present time deals with the influence of micro-organisms in inducing cutaneous disorders. Dr Anderson does not apparently coincide with the view held by Watson Cheyne and others, that the staphylococcus aureus and albus are almost the only ones which produce suppuration under ordinary circumstances. At least, in speaking of pustular eczema of the hairy portion of the face, under which heading he takes in sycosis, he remarks that "these pus cocci are formed in the purulent secretion, but it is doubtful whether they can be regarded as the cause of the disease." It appears probable that the condition of the soil, or a variation in their virulence, must be the reason of the irregularity manifested in their action. A commendable feature is the care with which the diagnostic differences are laid down. In numerous cases these are arranged in parallel columns, so as to render comparison easy. Eczema is fully dealt with, nearly one-fifth of the entire space being devoted to its consideration, but the additions to the original article are brief, and consist mainly of notices of some of the methods of treatment introduced by Unna. A separate section is given to strumous eczema, in the treatment of which it is stated that injections of tuberculin are often of the greatest value in association with local applications. It would have been specially interesting and valuable had Dr Anderson cited some actual illustrations of his experience of this in full. Thirty pages are devoted to a translation by Dr Wolff of Unna's lecture on eczema seborrhœicum, though without any annotations. This leads to a certain degree of repetition, as the erythema circumscriptum of Anderson (p. 101) is the same as the typus circumcisus translated the peritomic, but more simply the marginate, lesion of Unna. An interesting section is that on dermatitis herpetiformis, and with respect to it Anderson holds that impetigo herpetiformis is quite distinct from the pustular variety of the former,—a view in justification of which much may be said.

We have already indicated that other writers besides Dr Anderson have furnished contributions to the volume, thus imparting to it something of an encyclopædic character. None of these, except, possibly, that on leprosy, appear to have been revised by their respective authors, as they are reprinted word for word from the first edition, with very little, if any, alteration. Most of these relate to diseases occurring in foreign countries, and our acquaintance with several has become more extensive in the last seven years.

The rules for treatment throughout the work are judicious, and in the majority of cases full and precise.

The illustrations are of variable merit. Two of the coloured ones fairly represent the conditions intended, and the same may be said of many of the woodcuts.

Taken altogether, the work as it stands is perhaps quite worthy of its author's reputation. After an experience of more than thirty years, with the number of beds available for skin cases at his command in the Western Infirmary, the patients at the Hospital for Skin Diseases, his numerous staff of clerks, and his own well-known energy, Professor Anderson has resources unrivalled in the United Kingdom. We believe that a smaller volume, containing solely his own views, would have been a far more valuable contribution to dermatology than this large and composite work.

Les Grands Aliénistes Français. Par le Dr RÉNÉ SEMELAIGNE. Tome Premier. Paris: G. Steinheil: 1894.

DR RÉNÉ SEMELAIGNE has commenced a series of biographies of the distinguished French physicians who have done so much to improve the treatment of the insane and added so much to our knowledge in mental pathology and psychology. The first volume, newly published, contains lives of Pinel, Esquirol, Ferrus, Falret, Felix Voisin, and Georget. The life of Philip Pinel is written from materials and traditions in Dr Semelaigne's family, for his grandfather was a nephew of the celebrated physician of the Salpêtrière. Some of Pinel's letters written during the troublous times of the First Revolution are of real historic interest. The name of Esquirol, from the remarkable clearness and brilliancy of his treatise on insanity, is still kept in remembrance in this country; the other physicians recorded, though less known, are worthy of our regard, and their biographies have traits of interest sometimes quite unexpected.

We recommend Dr Semelaigne's book to all who take an interest in the treatment of lunatics and the literature of insanity. He seems to have special talents for a writer of biography. The elegance and precision of his style is warmed by real enthusiasm and admiration for the men whom he regards as his masters and guides in the speciality to which he is devoted. Dr Semelaigne proposes a gallery of busts in a walk of the Salpêtrière to commemorate these skilful, original, and philanthropic physicians. In the meantime he has himself furnished a series of portraits which will keep alive and spread their memories. As there are still some distinguished men of a later date to chronicle, we may hope that Dr Semelaigne's second volume will not be less interesting than the first.

L'Idiotie Hérédité et Dégénérescence Mentale, Psychologie, et Education de l'Idiot. Par le Dr JULES VOISIN, Médecin de la Salpêtrière. Paris: Felix Alcan: 1893.

THIS book is made up of twelve lectures delivered at the Salpêtrière in the spring of 1893. Within the limits of 292 pages Dr Voisin has managed to give a description of the symptoms and varieties of idiocy, which is at once accurate and comprehensive. Though the groundwork of the book has been furnished from his own rich experience, Dr Voisin has taken full advantage of the observations of others. It is worthy of remark that the most recent contributions to the study of idiocy come from his own countrymen. Nevertheless there is one to whom he is scarcely just. After citing Seguin's definition that idiocy is an intelligence badly served by imperfect organs, and that it is an infirmity of the nervous system which causes the withdrawal of all or part of the organs and the faculties of the child from the action of the will, which delivers him to his instincts and cuts him off from the moral world, Dr Voisin says he cannot sufficiently protest against this definition which the pedagogue has wished to impose upon the physician.

Dr Jules Voisin rightly observes that in idiots almost all the organs of the senses are healthy and normal; what is defective is the brain, the receptive organ of the sensations, and that it is this want of perception which constitutes idiocy and not the absence of will. As our worthy friend Dr Seguin is no longer able to defend himself, we may observe that the work which Dr Voisin cites, *Traitement Moral des Idiots*, was written in 1846, and that twenty years afterwards Dr Seguin published another book upon idiocy, this time in English. Had Dr Voisin consulted the later work he would have found another definition to which his criticism would not apply. "Idiocy is a specific infirmity of the cranio-spinal axis produced by deficiency of nutrition *in utero* and in neo-nati." Moreover, to one who believes that the brain is but the organ of the mind, Seguin's first definition will appear to be correct enough.

The truth is, Dr Seguin was well acquainted with the pathology of idiocy, and though he would not have disdained the title of pedagogue or schoolmaster, as he had quite a genius for education, he was also an accomplished physician, as may be seen from his book on Clinical Thermometry, as well as his treatise on idiocy. Dr Voisin, however, does his countryman justice when he says that Seguin's book is not the less a practical model of the education for children in general and idiots in particular.

Dr Voisin has a good chapter upon Myxœdematous Idiocy, at the end of which he observes that therapeutics remain powerless against this disease. He then goes on to mention the attempts at transportation of the thyroid and the injection of thyroid juice without any sign of appreciation. Little can be hoped from transplantation, but the use of preparations of the thyroid gland of the sheep has given results which Dr Voisin will no doubt be ready to record with congratulation in a future edition of his work. But these blemishes detract very little from the value of the book, which is sure to increase the reputation of its learned author. Its general descriptions are helped by some graphic accounts of cases and illustrated by seventeen engravings drawn by M. Raymond Petit. It is an improvement in French books that this work, like the rest of Alcan's recent publications, is enclosed in a neat cloth binding.

La Famille Neuropathique Théorie tératologique de l'Hérédité et de la Prédisposition Morbides et de la Dégénérescence. Par CH. FÉRÉ, Médecin de Bicêtre. Paris: Felix Alcan: 1894.

THERE is a large number of curious observations concerning heredity and the transmission of peculiarities, defects, and diseases. Most of these are recorded by different observers in different places, hence it is difficult to collect and compare them, and somewhat hazardous to found generalisations upon them. This is the task which Dr Féré has undertaken, and he has spared no pains to accomplish it in a satisfactory way. His own experience in the Bicêtre has brought him in contact with real facts, and a glance at his footnotes, or the list of authors consulted filling eleven pages in double columns, is sufficient to convince us how diligent he has been in studying the literature of the subject. He presents us with some general laws of pathological heredity which it is to be hoped the progress of research will put beyond question. Dr Féré gives prominence to the view that degeneracy may be defined as a dissolution of heredity which prevents the child reaching the normal standard of the parents. Hereditary deficiencies are often the result of impairment of nutrition. The author has made some experiments on the incubation of eggs, which show that certain deformities may be induced by artificial conditions. There is still much that is unexplained in teratological heredity, but Dr Féré's book contains the latest facts and is the most comprehensive on the subject which we have read.

Essentials of Nervous Diseases and Insanity; their Symptoms and Treatment. A Manual for Students and Practitioners. By JOHN C. SHAW, M.D., Clinical Professor of Diseases of the Mind and Nervous System, Long College Hospital Medical School. Philadelphia: W. B. Saunders: 1894.

THE aim of this little book is to record the leading symptoms and pathology of the diseases of the nervous system. Such an undertaking is useful, and the author may fairly claim to have accomplished it in a creditable manner. His acquaintance with the subject is unquestionable, and he has shown a good judgment in selecting essential facts and avoiding immaterial details. This style is now and then awkward, but almost always clear. Though this is a second edition, there are still some press errors remaining.

The Etiology of Osseous Deformities of the Head, Jaws, and Teeth. By EUGENE TALBOT, M.D., D.D.S. Chicago: The W. T. Keener Company: 1894.

DR TALBOT is Professor of Dental Surgery in the Women's Medical College, and Lecturer on Dental Surgery and Pathology at the Rush Medical College, Chicago. He has, however, evidently cultivated the science of medicine generally, far beyond the confines of the specialty of which he is a practitioner. Professors of dental surgery and Doctors of dental surgery are still exotics which on this side of the pond have not as yet been altogether acclimatised. Whether these qualifications and the eleven or twelve additional designations of a dental nature following the author's name as given on the title-page, lend additional weight or the stamp of a higher authority to his most comprehensive treatise, it is therefore not so easy for Britishers to decide. Apart, however, from any misgivings or shadow of dubitation which might thus be cast over his work as a standard of reference on the many and abstruse phenomena of which it treats, it is a production full of interesting and important suggestions, and one upon which no labour or investigation seems to have been spared. The earlier editions of the work were, says the author, an outgrowth of researches intended to oppose the theory that irregularities of the teeth and jaw were the result of local and not of constitutional conditions. Since that time, however, he has extended the scope of his original inquiry into oral and nasal medicine and surgery, so as to embrace also the eye, ear, and face. The general aim of the work is to show that the moral tendencies of the individual may be indicated in certain degeneracies of various tissues or organs, and that these degeneracies may be the result of abnormal neurotic development, either inherited, or acquired as a taint and transmitted to the offspring; that degenerations of forms, or "degenerative stigmata," constitute conspicuous symbols of various types of mental organisation; that those possessing similar neuroses of development incline to associate together and to intermarry, with the result of such degeneracies being continued or increased, and that such "stigmata" are found as characteristic indices present in criminals, prostitutes, the insane, etc., etc. That such conditions, moreover, are affected by the factors arising out of the struggle for existence, the law of the "survival of the fittest" affecting not only the entire organism, but also the parts of it separately. The book is profusely and most creditably illustrated, and a large number of statistical and other tables are to be found in its pages, the whole rendering it a volume full of interesting and suggestive matter.

Manual of Practical Anatomy. Vol. II.: Thorax—Head and Neck. By D. J. CUNNINGHAM, M.D., Professor of Anatomy and Chirurgery, University of Dublin. Edinburgh and London: Young J. Pentland: 1894.

WE have already had occasion to notice the first volume of this *Manual*, and we then had the pleasure of expressing a very favourable opinion as to its merits. This, the second and concluding volume of the *Manual*, fully maintains the high character of the first volume. It is undoubtedly one of the best text-books on practical anatomy in the English language.

Quain's Elements of Anatomy. Vol. III. Part 3, Organs of the Senses. By Prof. SCHAEFER. London: Longmans, Green, & Co.: 1894.

THE tenth edition of this standard work is gradually approaching completion. This part, "The Organs of the Senses," deals with a department of human anatomy in which great advances have been made in recent years, and it is therefore not surprising to find that this edition shows numerous alterations and additions when compared with its predecessor. These changes are especially evident in connexion with the description of the topographical anatomy of the nasal cavities and the organ of hearing, and also in the account of the connexions of the nerves of special sense. In the latter there is a good summary of the recent work of Golgi, Ramón y Cajal, Kölliker, Retzius, and Lenhossék. A considerable number of new illustrations has been introduced, and at the end of each section there is a copious bibliography.

Les Tractions Rythmées de la Langue. Par J. V. LABORDE. Paris: Felix Alcan: 1894.

'LE traitement physiologique de la mort. A rational and powerful plan to reanimate the respiratory function and life. The experimental determination of the mode of action or mechanism of the procedure.' These sentences on the title-page of a book of nearly two hundred pages indicate the scope of the work which M. Laborde placed before the Academy of Medicine in 1892. The author, while he recognises that pulling forward the tongue is an essential preliminary to endeavours to restore respiration, desires to draw special attention to rhythmic and repeated traction. The method adopted is simple, and consists in seizing the tongue, and from five to twenty times per minute using successive, rhythmic, forcible traction. Numerous cases are related of asphyxia produced by submersion, poison, anæsthetics, etc., in which the use of the method was followed by the recovery of the patient. M. Laborde believes the action is due to sensory impulses which pass along the superior laryngeal and glosso-pharyngeal nerves and stimulate the respiratory centre, and secondarily cause, through the phrenics, etc., contraction of the respiratory muscles.

Forcible traction of the tongue has for long been used in connexion with cessation of breathing during anæsthesia, and where that proves insufficient it is customary to follow the advice of Mr Joseph Bell,—to tilt the base of the tongue forward with the finger. These actions are carried out in the belief that the respiratory centre is reflexly stimulated, as M. Laborde describes, but to him the credit belongs of insisting that the traction be carried out repeatedly. We believe, however, that he lays too much stress on its value and forgets the advantage of artificial respiration—the most beneficial means for resuscitation.

The cases cited are interesting and instructive, and show clearly how necessary it is to prolong our efforts to resuscitate a patient even after all the superficial signs of death are present, but in all where success has attended the efforts of the operator we believe similar results would have been attained by the judicious association of pulling the tongue forward and artificial respiration. M. Laborde relies on a part of the means at our disposal, and stops short of other adjuvants which are invaluable.

Die durch eitrige Mittelohrentzündung verursachte Lateral Sinus-Thrombose und deren operativen Behandlung. Von ARTHUR AF FORSELLES. Helsingfors. August Hirschwald. Berlin: 1893.

THIS monograph would have attracted more attention had it appeared before Macewen's classical work on *Pyogenic Diseases of the Brain and Spinal Cord.* It is an able contribution to the interesting subject of phlebitis of the lateral sinus, and consists of a critical review of 143 cases of the disease, drawn from all sources, including six under the author's own observation in the surgical clinique at Helsingfors. So far as it was possible, the cases have been arranged in four groups—(1), 60 without meningitis or abscess; (2), 26 with meningitis; (3), 12 with cerebral abscess; and (4), 13 with meningitis and cerebral abscess. The bacteria concerned were for the most part streptococci, staphylococci of various kinds and the diplococcus pneumoniæ. The author endeavours to prove by statistics that the frequency of sinus-phlebitis increases with age till between 20 and 30, when the maximum is attained; that it is more common in the male sex, and on the right side, although suppuration in the middle ear is equally common on the two sides. For purposes of treatment the author defines the position of the sinus by a line drawn from the upper margin of the orbit to the external occipital protuberance. At a point along this line, 9 cm. from the protuberance, is to be found the bend or knee of the sinus. If the individual variation in the position of the bend be borne in mind, we recommend this method of defining the sinus as both simple in practice and substantially accurate. The chisel is very properly condemned as the instrument to be employed in exposing the sinus.

Not the least meritorious feature of this excellent work consists in the detailed report of all published cases, and the impartial tribute to the brilliant results obtained by surgeons in this country.

The Common Forms of Dyspepsia in Women. By ROBERT SAUNDBY, M.D. Edin., F.R.C.P., etc. Birmingham: Cornish Brothers: 1894.

THIS volume consists of the Ingleby Lectures, delivered by Dr Saundby at Mason's College in March of this year. In them he endeavours to place nearly all the forms of dyspepsia common to women under the category of neuroses dependent upon debility and over-work. After briefly giving an account of the modern tests for the investigation of the chemical characters of the gastric contents, he gives a note of several illustrative cases. The value of the lectures lies not so much in the elucidation of any striking or new method, as in the numerous and successful applications of simple principles founded on physiological truths, which are recorded by the author from his large experience.

Précis de Clinique Thérapeutique. Par le Dr A. F. PLIQUE. Paris: G. Steinheil, Éditeur: 1894.

DR PLIQUE is a voluminous writer of papers and *résumés*. In this volume he gives the principal facts of clinical therapeutics in a short and convenient form, akin to our handbooks. It is not much worse or much better than other books of its class,—a class we do not, as a rule, affect. Some of the prescriptions, to English eyes, are rather incomprehensible.

Hygiene de l'Alimentation dans l'état de Santé et de Maladie. Par le Dr J. LAUMONIER. Paris: Félix Alcan, Éditeur: 1894.

THIS is a book well worth perusal. The first part is devoted to a short consideration of the anatomy and physiology of digestion, the second to the digestion of different articles of food and to the best ways of sterilizing it. In the third part, the diet of people with regard to sex, age, and occupation is noted, while in the fourth and last division the different diets appropriate for different diseases are carefully entered into and explained.

Vade-mecum du Praticien Diagnostic et Traitement des Maladies Internes. Par le Dr FERNAND ROUX. Paris: G. Steinheil, Éditeur: 1894.

THIS is a book in which the symptoms of internal diseases are very shortly tabulated, the diseases being grouped in alphabetical order, and the treatment added at not very much greater length. It corresponds very much to our students' manuals, and does not contain anything very new or striking. To a young practitioner in a hurry, who is not well up in his work, it might prove of some use. Many of the paragraphs on the individual diseases, though short, contain much information, epigrammatically put, though the ingredients of some of the prescriptions would puzzle very considerably any one but a French physician.

The Pharmacopœia of the Hospital for Diseases of the Throat (Golden Square). Edited by F. G. HARVEY, F.R.C.S. Ed., Surgeon to the Hospital. Fifth Edition. London: J. & A. Churchill: 1894.

THE former editions of this little book were edited by the late Sir Morell Mackenzie, and contained many of the formulæ originally used by him. Besides these the present edition contains a number of fresh formulæ, necessitated by the introduction of new drugs and appliances. The book may prove of service to those who are called upon to treat diseases of the throat and ear, and also contains information which should be useful to the dispenser.

Essentials of Refraction and the Diseases of the Eye. Part I. By EDWARD JACKSON, M.D., A.M., Professor of Diseases of the Eye in the Philadelphia Policlinic and College of Graduates in Medicine, etc. *Essentials of Diseases of the Nose and Throat.* Part II. By E. B. GLEASON, S.B., M.D., Surgeon, Nose, Throat. and Ear Department of the Northern Dispensary of Philadelphia, etc. Second Edition, Revised. Philadelphia: W. B. Saunders: 1894.

THIS book is divided into two parts, the first dealing with the eye and the second with the throat and nose, each by a separate writer. It is arranged in the form of questions and answers, which, to our mind, destroys all the interest and individuality which the work might otherwise possess. At the same time, the student with examinations in view may possibly not be averse to obtaining his knowledge in this form.

A Text-Book of the Diseases of the Ear. By Dr JOSEF GRUBER, Professor of Otology in the University of Vienna, etc. Translated from the Second German Edition, and Edited, with Additions, by EDWARD LAW, M.D., M.R.C.S. Eng., Surgeon to the London Throat Hospital, and COLEMAN JEWELL, M.B. Lond., M.R.C.S. Eng., late Surgeon and Pathologist to the London Throat Hospital. Second English Edition. London: H. K. Lewis: 1893.

THE translation of Dr Gruber's well-known text-book has evidently been so well received in this country that a new edition is called for in a remarkably short time. We have already had occasion to refer in favourable terms to the careful and accurate manner in which the translators have done their work. The new edition is a faithful translation of the second German edition, but it has been added to and amplified by the addition of many important notes by the editors, and by a chapter on intra-cranial complications of ear disease, specially written by Dr Jewell. These additions will be found within brackets, to distinguish them from the original text, for which Dr Gruber is alone responsible. We are pleased to notice that some suggestions made by us for the improvement of the index and description of the plates have been adopted in this edition.

The description of operations on the mastoid is hardly as full and as clear as modern requirements demand, and we have failed to discover any mention of Stacke's method of operation; but, as we have said before, this book is a standard work, with which every aurist should be thoroughly and familiarly acquainted.

Lectures on Auto-intoxication in Disease, or Self-Poisoning of the Individual. By CH. BOUCHARD, Professor of Pathology and Therapeutics, etc., Paris. Translated, with a Preface, by THOMAS OLIVER, M.A., M.D., F.R.C.P., etc. Philadelphia: the F. A. Davis Company; London: F. J. Rebman: 1894.

THIS book is a valuable and exhaustive contribution to the subject of auto-intoxication, viewed from various standpoints. The fact that man is subject to infection from an intestinal canal in which all sorts of poisons are generated, is insisted on by Prof. Bouchard, who has also succeeded in isolating seven different toxic agents from the normal urine. Throughout the lectures he has relied greatly on experiments performed by himself, and says truly, "When I have hazarded certain hypotheses, I have never disguised from you the fact that they were hypotheses; on the other hand, whenever I have made positive affirmation, they have been supported by experimental demonstration." It is a book well worth reading, while a careful consideration of the facts adduced should lead its readers to treat many cases on a different, a more rational, and, we should hope, a more successful basis than formerly.

Examination Questions in Practice of Medicine, with Answers. Part 2.—Skin Diseases. Adapted for those preparing themselves for the Final Examination. By "Utile Quod Facias." Edinburgh: E. & S. Livingstone: 1894.

THIS is one of those condensations of knowledge designed to aid the student when occupied in what is termed "grinding" for the ordeal of an examination, and meant as an *aide-mémoire.* It would be a much better exercise if students would prepare such abstracts for themselves from their notes or text-books, but as a reminder it may prove useful in revising a subject. So far as it goes, this shorter catechism of dermatology is correct enough in statement of facts, but the information contained is much too scanty to be of any practical value; and, indeed, we are doubtful if even an indulgent examiner would rest satisfied with the answers in all cases were such repeated verbatim. An intelligent acquaintance with the subject, drawn from the perusal of one of the many admirable manuals, checked by observations of actual cases, would yield far better results than time spent in learning the contents of "cribs" like this.

A Descriptive Catalogue of the Clinical Museum and Journal of Proceedings. By JONATHAN HUTCHINSON, F.R.S., LL.D. Part 1. To be obtained at the Museum, 211 Great Portland St. London: J. & A. Churchill: 1894.

MR HUTCHINSON, besides being an indefatigable note-taker, has had executed for himself and collected from other sources, a large number of drawings, photographs, and illustrations dealing mainly, yet far from exclusively, with skin diseases and syphilis. Locked up in portfolios, such were almost useless for reference, even to the possessor. Having endeavoured in vain to induce the Royal College of Surgeons of England to find space for adequately displaying them, he has with his usual energy carried out a plan for exhibiting them, framed and arranged on shelves, or in accessible albums, in a museum of his own, open on Tuesdays from 2 till 6. A catalogue is being prepared, of which this is an instalment, armed with which one could not fail to learn much.

The Illustrated Hindu Medicinal Plants. By PARNA CHANDAR SAHA, Lecturer of the Cossipore Practical Institution of Horti-flori- and Agriculture, etc. Calcutta: The Indian Drug Supply Co.: 1894.

THIS is an attempt to describe and illustrate the various plants which furnish the drugs met with in the Indian markets. The work is both in English and Hindustani, and when completed will be a valuable addition to Indian medical literature. The illustrations are, on the whole, accurate, and the descriptions concise.

Saunders' Pocket Medical Formulary, with an Appendix containing Posological Tables, etc. By WILLIAM M. POWELL, M.D. Second Edition. London: Henry Kempton: 1894.

THIS book contains very many prescriptions arranged under the diseases for which they are recommended, but a person will never be a successful practitioner who has to consult a "Medical Formulary" for every prescription he writes. It is not a book we can recommend to the general practitioner.

Die Beri-beri Krankheit. Von Dr B. SCHEUBE. With two Plates and a Map. Jena: Gustav Fischer: 1894.

THE author of this book, who was formerly Professor in the School of Medicine at Kioto, Japan, has written a very detailed description of beri-beri. He believes the disease to be an endemic multiple neuritis, and all interested in the subject will do well to study his book. The bibliography, consisting in references to 253 publications, is exceedingly valuable. The map illustrates the geographical distribution of the disease very clearly, but we believe that its distribution in Africa is greater than that given by the author, who limits its incidence to Camaroon and the Congo. It probably occurs both in Central Africa, South Central Africa, and on the East Coast. The details of twenty post-mortems are interesting and useful, and its bacteriology receives sufficient attention.

Medical History from the Earliest Times; a Popular History of the Healing Art. By EDWARD THEODORE WITHINGTON, M.A., M.B. Oxon. With Two Illustrations. London: The Scientific Press, Limited: 1894.

DR WITHINGTON has managed in this handy volume, with much skill, to present a readable and well arranged sketch-map of the history of medicine from the earliest times of which we have record to the end of the eighteenth century. He justifies the study by a fine quotation from Dr Wendell Holmes—who advises all men to be acquainted with the history of a "noble profession which for more than two thousand years has devoted itself to the pursuit of the best earthly interests of mankind, always assailed and insulted from without by such as are ignorant of its infinite perplexities and labours, always striving in unequal contest with the hundred-armed giant who walks in the noonday, and sleeps not in the midnight, yet still toiling, not merely for itself and the present moment, but for the race and for the future."

Our space will not permit either analysis or criticism. There is little to criticise. The author is evidently a highly-educated, cultured gentleman, and his style and manner have the hall-mark of a good university. The one chief point that will strike the intelligent reader is how like in many ways the old physicians and surgeons were to us now, what a deal of human nature there was in them, and how clever, shrewd fellows many of them were, working as they did in feeble light and under infinite disadvantages. We are proud of our first aid to the injured and our ambulance classes; yet the Roman soldier carried in his knapsack bandages and other appliances, and could put them on. Labienus, after the battle of Ruspina, sent his wounded in waggons to Adrumentum. Lady doctors are supposed to be late products. The Romans had Medicæ, and Theodore Priscian addressed the gynecological part of his work on medicine to Victoria, whom he calls the "sweet servant of my art." Later on in history the Mulieres Salernitanæ were famous, not only for cosmetics, but for the treatment, among other things, of dropsy, indigestion, and hæmorrhoids. Perhaps, says our author, it may be of one of them that Magister Bernardus quotes the pretty line, "Ut ferrum magnes, juvenes sic attrahit Agnes." Trotula has a splendid recipe for making the hair golden, which if successful is certainly safe. The treatment of obesity is now the fashion, but Issa, the apothecary to the immortal Caliph Haroun al-Rashid, got £10,000 or its equivalent for curing the Caliph's cousin of fatness, and King Sancho of Leon was also cured by a likewise Arabian physician. The old physicians were sometimes pawky chiels. One advises his reader, "Suppose you know nothing, say there is an obstruction of the liver"—not an altogether unknown diagnosis in this age. One Zerbi inculcates special caution in prognosis; but unluckily his latest prognosis was also his last one, for he gave a favourable prognosis, and took a large fee, in the case of a Turkish Pasha, who promptly died. His friends suspecting treachery, pursued and caught the unhappy physician, and sawed him asunder between two planks, and his son with him!!! What a warning to some confident diagnosticians. The newspapers lately were full of the sad fate of a fool who ate so much rubbish to order, that he was called the human ostrich. Amatus Lusitanus, in the sixteenth century, knew a man at Ferrara who ate leather, shells, and broken glass, so that they called him the ostrich.

Verily, as the Preacher says, there is no new thing under the sun.

Edinburgh Hospital Reports. Vol. II. Edinburgh and London: Young J. Pentland: 1894.

THE second volume of the *Edinburgh Hospital Reports* will be welcomed by many, keeping up, as it does, the high character of its predecessor. Most of the medical and surgical officers of the Infirmary and Sick Children's Hospital are represented, from the senior physician and surgeon to the junior clinical assistant. The papers are full of interest, and valuable clinical work.

The volume opens with Professor Gairdner's Address to the Royal Medical Society. The sketch, dealing as it does with personal reminiscences of the Royal Infirmary in the fifties, takes us back to the days when such giants as Begbie, Murchison, and Christison added lustre to the Edinburgh Medical School. Ghosts they are indeed, but ghosts who are an inspiration, not a warning.

Dr John Wyllie contributes a valuable and thoughtful paper on the Diagnostic Significance of Paterns of Abdominal Tumidity, a paper valuable alike to the physician and surgeon. Dr Muirhead deals with the much-vexed question of the treatment of Typhoid Fever. He believes in the administration of internal antiseptics, such as calomel, hydronaphthol, and benzonaphthol, which have given good results in his hands. Though, according to our American brothers, the method "has not passed beyond the stage of primary laudation," it seems to be backed up by common sense as best calculated to battle with the evil at its origin, and to be a step beyond a purely symptomatic course of treatment.

Dr Leith contributes two papers which are the result of careful work, but they would have been more in keeping with the rest of the volume had they been considerably compressed.

Four of the papers are on Cardiac Disease, and are all of great clinical interest,—Dr Mackenzie's, on Tricuspid Stenosis, containing many original observations.

The surgical officers of the Infirmary are well represented. Mr Duncan gives us his extensive experience in the treatment of vascular tumours by electrolysis. The record of the first operation in Scotland for microcephalus is given by Mr Joseph Bell and Dr Burn-Murdoch.

Two very interesting papers come from Professor Annandale's wards,—the one on a case of Syringomyelia, by Mr Alexis Thomson, and the other by Dr Logan Turner, on internal derangement of the knee joint.

The statistics of the usual kind, are elaborate, and, for a careful student, possibly instructive.

The plates and figures are well executed. The Editors may be congratulated that the present volume forms a fitting companion to its predecessor, falling in no way short of it in interest and in the excellent character of the work.

The Johns Hopkins Hospital Reports. Vol. IV., No. 1. *Report on Typhoid Fever.* Baltimore: The Johns Hopkins Press: 1894.

THIS very valuable volume contains the reports of 229 cases of typhoid fever, with an account of the treatment, a study of the fatal cases, and notes on the special features, symptoms, and complications. Dr William Osler contributes, amongst other papers, one on a rare sequel, the "typhoid spine." Dr Thayer gives a careful study of the blood in typhoid fever, with two cases of post-typhoid anæmia.

Decidedly beneficial results seem to have been obtained by the use of the cold bath, the mortality having been lowered, and the occurrence of nephritis as a complication reduced from 12·1 to 8·6 per cent.

Ehrlich's diazo-reaction in the urine was found of little value as a diagnostic aid, failing when most needed.

The volume is one which repays careful study, and is a model of accurate clinical observation. Dr Osler and his colleagues are to be congratulated on the production of a work which will be a classic to all students of the subject.

The Johns Hopkins Hospital Reports. Report in Neurology. Baltimore, 1894.

THE whole of this elaborate report, comprising 127 pages large octavo, is the work of Dr Henry Y. Berkley. The first paper is on "Dementia Paralytica in the Negro Race." The author confirms the opinion that there has been a considerable increase in the insane amongst negroes since the abolition of slavery. This he attributes to the increased strain and stress of life required by competition to obtain a livelihood. The negro, it is true, takes life more easily, but he is more addicted to debauchery and venery, is without sanitary knowledge, and is sometimes exposed to a want of sufficient food. Dr Berkley gives the proportion of insane negroes to the sane in Maryland as 1 to 814 of the male, and 1 to 747 of the female, or 1 to 776 of the entire coloured population, while the proportion of the insane in the entire white population of the State stands about 1 to 525.

Dr Berkley gives in full detail the lesions which he has observed in the cases of general paralysis in his negro patients. As he observes, the morbid histology of the disease in the negro differs in no essential point from reports of the same affection in the white man. He regards general paralysis as a diffused senile atrophy of the whole brain, occurring with far greater virulence than the atrophy of old age, and originating in a primary alteration of the sheaths of the vascular channels.

The other papers record the author's researches on the histology of the liver, the pulmonary and cardiac nerves, the nerves of the submaxillary glands of the mouse, and the intrinsic nerves of the thyroid gland. In these studies Dr Berkley has made use of the best and newest methods of examination, and the whole work is of an original and painstaking character. It is illustrated by nine pages of lithographic plates.

The Asclepiad: a Book of Original Research and Observation in the Science, Art, and Literature of Medicine, Preventive and Curative. Second Series. First Quarter, 1894–5. Vol. XI., No. 41. By Sir Benjamin Ward Richardson, M.D., F.R.C.S. London: Longmans, Green, & Co.

This new number of the one-man magazine maintains its high standard of force and originality. Some physicians may debate the merits of the treatment of disease without alcohol—no one can deny that Sir Benjamin states his case well on 500 cases. Many general practitioners will entirely disapprove of the author's views on pharmaceutical apothecaries—no one will question the perfect sincerity and unselfishness of the reasons he gives. The sketch of the life of John Howard is short, but compact and characteristic. Probably the most interesting and valuable of the Opuscula practica is the note so neatly named on Fumbling, Stumbling, and Mumbling as signs of Decrepitude, while a short note on a Practical Point in the Treatment of Enteric Fever is worthy to be added to Dr Muirhead's late admirable paper on the subject in the *Edinburgh Hospital Reports*, vol. ii., p. 107.

Intercolonial Quarterly Journal of Medicine and Surgery. Vol. I., No. 2. August 1894.

This second number keeps up its high standard of endeavour. It is well printed on good paper, and its illustrations are much above the average in excellence. Rejoicing in the advantage of the ominous number of thirteen editors, the various colonies of

New South Wales, New Zealand, South Australia, Queensland, Tasmania, Western Australia, and Victoria, are all represented on the editorial staff. The articles are well arranged, and some display considerable originality,—indeed, are an immense advance on some colonial journals, whose contents are chiefly cures for snake-bites, and accounts of actions for damages against medical practitioners, or letters to the editor about doctors squabbling.

With all goodwill we say to this journal, "Advance, Australia."

Everybody's Pocket Cyclopædia of Things worth Knowing; Things Difficult to Remember; and Table of Reference. By DON LEMON. 630th Thousand.

THIS extraordinary little book is full of the most useful, recondite, and interesting information on things in general. It contains 224 pages and a small supplement. It seems to be published for and given away by the Manager of the London and Universal Bank, Limited, for the sum of 4½d., and is certainly the best fourpence-halfpenny worth of information we have ever seen. That the London and Universal Bank is well advertised in its earlier and later pages does not do any harm to the happy purchaser.

Part Third.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

MYXŒDEMA AND THYROID EXTRACT.—Crary of New York writes on this topic in the *American Journal of the Medical Sciences* for April 1894, and concludes that the effects of thyroid administration may be summed up as follows:—Increased metabolism shown by—(1), Elevation of temperature; (2), increased appetite, with more complete absorption of nitrogenous foods; (3), loss of weight, with nitrogen excreted in excess of that taken in the food; (4), growth of skeleton in the very young; (5), marked improvement in body nutrition generally; (6), increased activity of mucous membranes, skin, and kidneys. The rheumatic symptoms and the anæmia are not only not relieved, but are most frequently aggravated.—*Therapeutic Gazette,* August 15th, 1894.

SPERMIN IN CHOLERA.—A. W. Poehl (*Vratch,* No. 32, 1894), strongly recommends a fair trial of spermin in Asiatic cholera, which method has recently been employed with the best results in three consecutive cases at the Semenovsky Alexandrovsky Vreunyi Hospital in St Petersburg. The beneficial effects are attributed to—(1), a direct influence of spermin on the cholera vibrio (*Epitome*, January 7th, 1893, par. 21), and (2), spermin increasing with organic oxidations ("tissue respiration") and thus promoting the destruction and elimination of leucomaines absorbed from the intestines (*Epitome*, September 3rd, 1892, par. 214). The use of spermin is mainly indicated in initial stages of the disease. In advanced cases a favourite result can be expected only in the absence of a profound renal failure. While suggesting clinical experiments with the substance in cholera cases, Poehl offers the necessary supply of his spermin ("Spermin Poehl") gratuitously to every investigator willing to try it. (Address, Prof. A. W. Poehl, Vasilievsky Ostrov, St Petersburg.)—*British Medical Journal*, October 6th, 1894.

THE TREATMENT OF DIPHTHERIA.—Leige (*Therap. Monatshefte*, July 1894) gives an account of an epidemic of diphtheria which broke out in his practice. The cases were very severe in nature, and various circumstances rendered a careful treatment with repeated local applications (pyoktanin) impossible. The author at first resorted to various measures, but with little success, and of the first forty-one cases four succeeded. Thereafter he employed liquor ferri perchloridi, which only required an application twice a day, and this was the only treatment adopted during the onset in the remaining thirty-seven cases. Of these patients only one died—a boy who was affected with severe glandular inflammation. In no case, however, not even the latter, did the affection spread to the larynx. As regards the painting of the tonsils, an accidental contact with healthy mucous membrane does no harm, but may render the area less susceptible, and thus check the spread of the malady. Usually the patient vomits once, thereby ejecting some of the liquid, which may have run down the œsophagus. Three or four applications, sometimes even one, seemed to check the virulence of the disease. The treatment was usually followed by the internal administrations of solution. An extension to the nose was disregarded. In view of the remarkable success achieved by the author, he regards perchloride of iron, used as described, as almost a specific.—*British Medical Journal*, October 6th, 1894.

INJECTIONS OF SULPHATE OF SPARTEIN AS A PRELIMINARY TO CHLOROFORM ANÆSTHESIA.—In a communication to the Société de Biologie (*Sem. Med.*, August 11th), Langlois and Maurange gave the results of researches made by them on this subject. Dastre and Morat had recommended the use of atrophine combined with morphine for the prevention of the cardiac failure which sometimes occurs during chloroformisation, the inhibitory action of the pneumogastric nerves on the heart being in this manner lessened. According to the authors, the same object may be attained by the combination of sulphate of spartein with morphine. Manometric tracings from a rabbit showed the difference at the beginning of chloroform anæsthesia when the animal was under the influence of spartein, and when it was in its natural state. In the former case respiration disturbance is caused by the contact of the chloroform with the nasal mucous membrane, but the heart soon regains its natural rhythm. The diminution of the excitability of the vagus is not very marked after weak doses (3 centigrammes) of spartein; still it is already perceptible. In the dog, besides the regularity of the cardiac tracing, the authors noted the persistence of the arterial pressure, which keeps at a height of about 10° during profound narcosis. Langlois and Maurange have already employed the method referred to 120 times on the human subject. From 3 to 4 centigrammes of spartein and 1 centigramme of morphine are injected fifteen minutes before the administration of chloroform is begun. In many of these cases the patients suffered from heart disease, or had to undergo prolonged operations, such as laparotomy, herniotomy, reduction of dislocations. In all of them the heart beats continued full and perfectly regular.—*British Medical Journal*, September 22nd, 1894.

THIOFORM.—Schmid (*Therap. Monat.*, April 1894, quoted by *Deut. Med. Zeit.*, June 1894), after having tried thioform in the treatment of burns and as an application to leg ulcers, holds that his results justify the statement that this drug is an admirable application, since it is non-toxic, easily managed, and produces no after-effects, and since it has a special quality of hastening citatrization, even when large surfaces are granulating. Hoffmann, writing on the same topic, holds that this drug is equalled in healing power by no other therapeutic agent. Ulcers, burns, abscesses, even chancroids, yield rapidly under its use. It is absolutely non-toxic, even when used in large quantities. It is hæmostatic, locally anæsthetic, so much so that the use of cocaine is often superfluous. It so much lessens wound secretion that drainage is unnecessary. In addition to these many advantages the drug is odourless, and exercises a powerful deodorizing effect on foul secretions.—*Therapeutic Gazette*, August 15th, 1894.

ACTION OF TRIONAL.—Dr Otto Bakofen, in his Inaugural Dissertation, gives an account of certain experiments on animals which he carried out with trional at a time when the clinical effects of this drug were not so well known as they now are. From his observations he concluded that trional acts much more quickly than sulphonal; that the sleep produced by it lasts about an hour longer, and that the animals did not become habituated to it. Only by doses which, in comparison with the sleep-producing dose in man, and also in relation to the body-weight of the animal, were enormous, and which, besides, were given continuously or with only short interruptions, was it possible to poison the animals. In the kidneys, as in the other organs, no change was found. Hæmatoporphyrinuria was never observed.—*The Lancet*, August 25th, 1894.

TOLYSAL.—Bothe (*Münch. Med. Woch.*, August 7th, 1894) relates his experience with this agent as an anodyne. It is a derivative of tolypyrin. The author has used it in the insane, in the headache of the neurasthenical and hysterical, as also in that of organic brain disease. In neurasthenical headache he has found it very useful, and often when antipyrin was without effect. In such cases, with headache during the day and sleeplessness at night, it was very efficient. The hysterical headache was sometimes influenced and sometimes not. In one case of true migraine it promptly cut short the attack, but in another case it was useless. In the headache of organic brain disease, of bone disease, or of old rheumatism, it was without effect. On the insomnia of the insane, without excitement, it was also of service. The dose is from 1½ to 2 g., mostly the latter, 1 g. being generally insufficient. It has a disagreeable taste, but is readily taken in hot soup or beer. In the empty stomach it may produce nausea. Vertigo was sometimes noted, but it does not occur if the recumbent position is maintained. The author says that tolysal is deserving of futher investigation.—*Brit. Med. Journal*, September 8th, 1894.

BISMUTH LORETIN.—Blum and Barwald (*Münch. Med. Woch.*, September 4th, 1894) state that the antiseptic action of loretin depends upon the gradual separation of iodine, which in the nascent state has considerable antiseptic action. Loretin forms salts with metals, and in these new bodies this property of the separation of nascent hydrogen is in some cases retained. This holds good with bismuth loretin, which possesses also the astringent properties of bismuth. The salt, even in large doses, does not produce symptoms of poisoning in animals, but after its internal administration iodine appears in the urine. As an application to chronic ulcers and specific lesions of the skin it was found extremely useful. Healing took place rapidly, and frequent dressings were found unnecessary. It was also found useful in weeping eczema, including eczema of the scalp. It was used in powder, ointment (10 per cent.), and paste. As an internal remedy in doses of 7½ grains it was found useful in the diarrhœa of phthisis.—*Brit. Med. Journal*, October 6th, 1894.

THE THERAPEUTIC USES OF THE GLYCERO-PHOSPHATES.—In a preliminary communication, Albert Robin (*Gazette Médicale*, April 28th, 1894) treats of the uses of the glycero-phosphates in clinical medicine, and concludes as follows:—1. The glycero-phosphates are powerful therapeutic agents, ameliorating the general nutrition through an action upon the nervous system. 2. They are especially indicated in nervous depression. 3. Hypodermically injected, these remedies produce effects still more pronounced than those of the testicular juice, whose medicinal virtue depends upon the amount of organic phosphorus which it contains. The employment of the glycero-phosphorus, definite products, and the dose of which can be regulated, is preferable to that of the testicular liquid, an uncertain remedy and susceptible of alteration. 4. The observations so far made point to the possibility that the subcutaneous injections of the glycero-phosphates can be utilized in the treatment of nervous asthenia (whatever the cause of the trouble), of phosphated albuminurias, of phosphaturias, of Addison's disease, of the various forms of sciatica, and of facial tic douloureux. In locomotor ataxia the results have been uncertain, but they point to a diminution of the lancinating pains occurring in this disease.—*The Therapeutic Gazette*, August 15th, 1894.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Glycosuria from taking Thyroid Extract.—Dale James records a case in which a man of 45, an old psoriatic, took, without effect on his psoriasis, two tabloids daily. A week after, he began to take four; however, he experienced depression, with flushing and palpitations. The nervous symptoms increased, he found difficulty in writing, and felt and looked a very old man. A week later there were all the symptoms of marked glycosuria, which disappeared when the thyroid was discontinued, and he was put on a diabetic diet, but the psoriasis was in no way benefited.—*British Journal of Dermatology*, June 1894.

Physiological Effects of Arsenic.—Mr Hutchinson relates the following:—" A young gentleman consulted me for a troublesome and severe form of palmar and plantar psoriasis. He had already had much treatment, and I was very desirous to cure him. Arsenic in nine-minim doses three times a day was ordered in combination with a sixteenth of a grain of tartarized antimony. He took these doses for a fortnight without the slightest inconvenience, and with the utmost benefit to the affected parts. Suddenly, at the end of that time, the palms and soles, nearly well of the eruption, became exceedingly tender. He complained that they felt hot and smarted. On leaving off the arsenic this condition disappeared."—*Archives of Surgery*, April 1894.

Lentigo-Melanosis.—Under this compound name Mr Hutchinson has described a peculiar degeneration of freckles. There are, first, freckles such as are seen on the eyelids of many elderly persons, then these become very black and enlarge. Next, the freckles coalesce, and we have a patch which is infective at its edges, and which may extend to the adjacent mucous membrane, and even to the cornea of the eye. Still there is nothing to be called new growth, the process being simply one of pigmentary staining without appreciable thickening. Lastly, however, another stage is assumed, and a growth takes place, which is for the most part unpigmented, and which in its tendency to break down and ulcerate reveals its malignant nature. In some cases this final growth is of epitheliomatous structure, and in others sarcomatous. This form of disease is not limited to the eyelids, although its most typical examples are seen on them. He has already described examples on the lips and prepuce. The condition is illustrated by some admirable coloured drawings.—*Archives of Surgery,* January 1894.

TREATMENT OF XANTHOMA BY MEANS OF ELECTROLYSIS.—Fox has had good results from this. In one case of a man with xanthoma of the upper and lower eyelids, there was rapid disappearance after two introductions of the needle, and a patch on the eyelid of a woman quite disappeared after five.—*Journal of Cutaneous and Genito-Urinary Diseases,* April 1894.

THE PRESENT POSITION OF THE LICHEN QUESTION.—This was one of the subjects submitted to the Dermatological Section of the International Congress in Rome, and the opinions expressed thereon by two of the speakers have come under our notice. Mr Malcolm Morris, after an exhaustive review of the several statements made by authors of eminence since Willan's time, showing the confusion which even now reigns as to what is and what is not to be regarded as lichen, thus formulates his own conclusions as a contribution to the settlement of the question. 1. Lichen is not a disease, but a type of lesion. 2. The term should be reserved for the clinical entity described by Erasmus Wilson under the name of lichen planus, which is the same as Hebra's lichen ruber. 3. The affection described by Kaposi under the name of lichen ruber acuminatus is identical with that described by Devergie and Besnier as pityriasis rubra pilaris. 4. Other forms of lichen—obtusus, hypertrophicus, verrucosus, etc.—are varients of the typical form, the Hebra-Wilson typical lichen planus. 5. The group of symptoms to which the name of lichen planus is applied is probably caused by a variety of factors, but at present we are almost entirely in the dark as to its pathogenesis (*Med. Press and Circular,* June 27, 1894). Neisser, again, while he agrees with much of what has been said by Malcolm Morris, holds that, 1. Lichen ruber appears in two principal forms, which are to be distinguished as lichen ruber planus (Wilson) and lichen ruber acuminatus. All other eruptive forms described under different names are modifications of this chief type. 2. Pityriasis ruber (Devergie-Besnier) is a disease *sui generis* and a keratinosis,—that is, a disease with essential anomalies of keratinization of an acquired character. At the same time he does not strictly adhere to the description of lichen ruber acuminatus given by Hebra, senior, nor to that provided by Kaposi, since he thinks that the two authors last named referred to entirely distinct diseases, the sole common element being the acuminate form of the lesions. It would thus appear that for some time to come many various opinions will continue to be held as to the constitution of the lichen family.—*Separat-Abdruck dus dem Archiv für Derm. und Syph.*, 1894.

DISSEMINATED AND CONSECUTIVE GANGRENE OF THE SKIN OF HYSTERICAL ORIGIN.—Disseminated gangrene of the skin is a dermatological rarity. Bayet, of Brussels, adds another to the dozen or so scattered throughout literature. Some of these have been ranged among the cases of gangrenous zoster, others have been regarded as examples of pemphigus traumaticus, while others, again, have been described under the name of urticaria gangrænosa. (He omits the instances of erythema gangrænosum recorded by Fox and ourselves.) In Bayet's case, as in one related by Joseph, there was an initial traumatism, a superficial burn caused by sulphuric acid. It affected a young man aged 19. The succession of phenomena is thus described. First, a diffuse redness, much more extensive than the spot, which later underwent necrosis; then the appearance of small white shining points, isolated one from another, the earliest sign of epidermic changes. These soon altered; they remained shining, but assumed a brownish-yellow tint. Then the active hyperæmia, which had preceded the appearance of the patch, lessened and became limited. A hæmorrhagic punctum formed in the situation of these altered epidermic areas. The process might now be arrested; more often it went further: the mortified spots became confluent, and ended by producing a continuous very superficial eschar of a yellow-ochre hue. The separation of this eschar disclosed a superficial ulceration, which was long in healing. In general it did not form a true scar; the epidermis was restored, but less resistant and pigmented. This epidermic regeneration was often interrupted by the formation of sero-sanguinolent blebs. When the process invaded the derma, and a true cicatrix ensued, this often took on the aspect of keloid. The complaint has some striking analogies with traumatic hysteria. Like this, it develops in a situation the seat of a painful traumatism, and from thence spreads without any preference to a particular nerve territory. In this class of affections one must constantly be on the look-out for simulation. This is sometimes so subtle, and so little likely, that one is tempted to deny it, and this possibility was carefully borne in mind, and can be entirely excluded. The persons affected, except in one instance, have been young, and all were of a manifestly neuropathic temperament. They should be classed among the epidermolytic processes of a trophic nature, and alongside certain forms of pemphigus.—*Annales de Dermatologie et de Syphiligraphie*, Mai 1894.

COMPOUND TINCTURE OF COAL TAR.—The preparations of coal tar in the form of tinctures, from a pharmaceutical standpoint, are not well understood. Duhring and Baer have undertaken a series of experiments to obtain the most satisfactory preparation for external use. The most valuable published formulæ are those which either contain alkalies, or are made with tinctures of quillaia or of elm bark. The results obtained with the many formulæ containing coal tar and alkalies were not satisfactory, most of the products showing more or less precipitation when water was added. Before considering the action of quillaia, it was necessary to determine the best mode of preparing this tincture. It was found that a strong tincture, one part to four of 95 per cent. alcohol, was the preferable one. One part of coal tar should be digested with six parts of tincture of quillaia, with frequent agitation, for not less than eight days—better for a longer period—and finally filtered. The resultant is a brown-black clear tincture, which upon the addition of water forms a cleanly yellowish emulsion, the colour and certain other characters varying with the kind of coal tar used. This is stimulating, and should be used weak, in, say, sixty parts of water. It can be employed as a wash when tar is indicated, and well replaces various proprietary articles.—*American Journal of Med. Sciences*, May 1894.

TRICHOTILLOMANIA.—Under this term a peculiar pruriginous condition has been described by Hallopeau, the characteristics of which he thus summarizes:—1. There exists, as described by him in 1889, a diseased condition constituted by intense pruriginous sensations, becoming exaggerated at intervals, and affecting the hairy parts of the body. 2. This is accompanied by a morbid impulse, which induces the patients to seek relief by tearing the hairs on regions where these grow. The malady consequently deserves the name of trichotillomania, from *τίλλομαι*, meaning "I pull out." 3. Neither the hairs, nor the skin, exhibit any alterations appreciable to the naked eye. To the microscope the hairs appear equally intact: a certain number burrow under the epidermis. 4. This is not a variety of prurigo, for the eruptions peculiar to that disease are wholly absent. 5. The complaint is of very prolonged duration, and very probably incurable. The treatment which seems best to alleviate is isolation of the itching parts, either by aid of protective varnishes, or by envelopment in indiarubber coverings. A case of this peculiar disease is recorded by Hallopeau, as affecting a man of 35, of a robust constitution, but an alcoholic, and exhibiting a gloomy and sad expression. In his case, though all the hairy parts were the seat of paroxysms of itching, the axillæ and pubis showed the most pronounced alterations, and, indeed, were nearly quite denuded of hair. The pruriginous sensations compelled him to pluck out the hairs, and on the head he kept the hair cut extremely short. On the back and lower limbs were brown stains, apparently left by eruptions due to scratching. A mentholated balsam and indiarubber covering led to some relief in his case.—*Annales de Dermatologie et de Syphiligraphie*, Mai 1894.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P. Ed., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, and on Midwifery and Gynæcology, School of Medicine, Edinburgh.

The Treatment of Uterine Fibromyomata, especially the Operative Treatment by Abdominal Section.—Prof. Ceci brings to a conclusion his long and interesting paper on the operative treatment of uterine fibroids. He comes to the conclusion, from the study of his own cases and the reports of those of other operators, that abdominal section should be reserved for the tumours which from their anatomical position (subserous, mixed, or intra-mural of the corpus uteri, and some intra-ligamentous), or from their large size cannot be attacked per vaginam. At the same time the breaking up (*morcellement* of Péan) of the tumour or of the myomatous uterus greatly diminishes the difficulty in operating arising from the bulk of the neoplasm. The abdominal enucleation of parietal fibroids, when single or few in number, is a good operation of conservative surgery. They may be removed also by the vagina after dilatation of that canal, and incision of the cervix uteri. Where the myomatous uterus is not large, and has given rise to menorrhagia, but not to pressure symptoms, castration, along with ligation and section of the broad ligaments, is sometimes, but not often, indicated. Where, however, the tumour is voluminous, or adherent, or has caused pressure symptoms, its removal by abdominal section is the best operation. In such a case supravaginal amputation is not often indicated; total hysteromyomectomy is to be preferred. Usually when hæmostasis is perfect, both the peritoneum and the vagina may be completely closed.—*Il Policlinico*, No. 15, 1894.

Rupture of the Recto-vaginal Septum during Labour without Tear of the Perineum.—Dr V. Baudry met with a case in which the patient had been delivered before his arrival by a midwife, and in which there was a large tear in the recto-vaginal septum whilst the perineum and vulva were intact. The patient was a primipara, 27 years of age; the labour was somewhat long, and the head appeared at the vulva; a hand then protruded from the anal aperture, and after the birth of the head the midwife succeeded, by passing two fingers into the vagina, in delivering the hand by the natural passages. The placenta was expelled naturally, and the bleeding was slight. The large triangular tear in the posterior vaginal wall was immediately sutured by Dr Baudry, and after some months the small fistula which had remained was closed by means of repeated cauterisations with nitrate of silver. The cause of the tear was found to be an abscess of the posterior vaginal wall, which had occurred about twelve months before confinement. —*Annales de Gynécologie*, July 1894.

TREATMENT OF CANCER OF THE GRAVID UTERUS.—Dr E. Hernandez is of opinion that in cases of uterine cancer discovered during the first three months of pregnancy, vaginal hysterectomy is the operation that should be chosen. When the fœtus is viable (seven and a half months), Cæsarean section, immediately followed by complete extirpation of the uterus and its annexa, should be performed. Between four and seven and a half months, Dr Hernandez insists that complete abdominal hysterectomy should be carried out without delay. It is necessary to do so on behalf of the mother, for if one waits in the hope of saving a viable infant the cancer may have spread so much that no radical intervention may be any longer possible. Mackenrodt's method of operating is described, and in conclusion the author insists that uterine cancer should be looked for in pregnant women, and that when the diagnosis is doubtful the microscope should be called to our aid.—*Annales de Gynécologie*, August 1894.

EARLY DETECTION OF THE FŒTAL MOVEMENTS.—Dr Voituriez records a case in which fœtal movements were detected at the sixteenth week (*i.e.*, four weeks before the usual time) in five successive pregnancies. He comes to the conclusions that the movements of the fœtus (partial or total) occur at a very early date, probably before the seventh week; that they may be perceived objectively by the physician from the fourteenth to the sixteenth week; and that they may be recognised subjectively by the mother at the sixteenth week, *i.e.*, quite before the classic date of their detection. The important bearing of these conclusions upon the determination of the probable date of confinement calculated from the first occurrence of the movements is self evident.—*Archives de Tocologie et de Gynécologie*, August 1894.

A CASE OF COMPLETE INVERSION AND PROLAPSUS OF THE UTERUS.—Dr J. W. Pickel delivered a patient in which the infant presented with the head in the R.O.A. position. The final expulsive pain projected the child forcibly to the full extent of the length of the umbilical cord. During the expulsion of the placenta Dr Pickel noted that the fundus uteri was unusually broad, and that at each contraction it became smaller much faster than is the rule. The placenta could be felt in the vagina, and when the doctor made gentle traction on the cord, there came a strong expulsive contraction and the uterus inside of the placenta lay fully 6 inches outside of the vulva. Great pain interfered with efforts at replacement of the womb, so a hypodermic injection of morphine was given and the uterus returned to the vagina. Further reduction was impossible till the patient had been anæsthetised. Recovery perfect. Eight grains of quinine had been given during labour.—*New York Journal of Gynæcology and Obstetrics*, August 1894.

CASES OF EXCESSIVE SECRETION OF MILK.—Dr Thomas C. Smith records two cases of excessive secretion of milk, polygalactia, or, as it is sometimes called, "mammary diabetes." In the first case, the patient's condition was deplorable, and the quantity of waste milk was half a gallon daily. Belladonna, iodide of potassium, strapping the breasts, etc., were all tried without affording relief; but finally antipyrin and opium were administered, and seemed to meet the requirements of the case, but only after three months had elapsed since the beginning of the trouble. The child was not well nourished by the milk in this case. In the second patient the waste was not so great, the condition gradually improved, and the infant was well nourished. The author then discusses the various causes that have been cited for galactorrhœa, and points out that the treatment of each case must be considered separately. Bringing on the menses, uterine irritation, hot vaginal douches, strapping and bandaging the breasts, external and internal use of belladonna, iodide of potassium, ergot and opium and antipyrin, are all therapeutic means which may succeed in some instances, and fail in others. Dr Smith would try first opium and antipyrin. —*American Journal of Obstetrics*, August 1894.

CERVICAL PREGNANCY.—A case of the rare condition known as cervical pregnancy is recorded by Dr R. C. Kirkpatrick. The patient had missed two periods, and was nearly at the time when the third was due. Pain and hæmorrhage came on, and per vaginam it was felt that the cervix was much enlarged and elongated and reached nearly to the orifice of the vagina. The external os readily admitted the forefinger, and inside it was the remains of a placenta. When the contents were removed the cervix contracted to nearly its normal size. The fundus uteri, as felt by the bi-manual, was not enlarged to any extent. The author concludes with some short notes on the literature of this form of ectopic gestation.—*Montreal Medical Journal*, July 1894.

STRYCHNINE IN OBSTETRIC PRACTICE.—Dr J. M. Duff states that strychnine, judiciously used, is most efficient in toning up the uterine muscles, and renders the indications for instrumental delivery much less frequent. It improves the appetite, lessens insomnia, insures a shorter and less painful delivery, and lessens the after-pains. Its action is much more prompt than that of ergot. —*Pacific Medical Journal*, July 1894.

OCCASIONAL SURGICAL PERISCOPE.

By ALEXIS THOMSON, M.D., F.R.C.S.E.

I. Bier of Kiel.—FURTHER NOTES ON THE TREATMENT OF SURGICAL TUBERCULOSIS BY ARTIFICIALLY INDUCED VENOUS CONGESTION (*Transactions of German Society of Surgery*, 1894):—

(1.) A number of cases of tubercular disease of joints completely recover under this treatment.

(2.) Certain cases do not improve, but shows signs of progress to the bad: (*a*) Tubercular abscess may develop; it is in no sense an indication for excision of the joint, as it is curable by puncture and injection of iodoform and glycerine; the abscess is to be recognised and treated as early as possible, and as it sometimes develops without symptoms, it is to be searched for at frequent intervals. (*b*.) Formation of sores and fungating granulations; the former heal by suspending the congestion for a time, the latter ultimately cicatrise under continued congestion. (*c*.) The most unfavourable developments are the occurrence of acute inflammation, acute abscess, and acute suppuration in the joint; these are to be treated on general principles and the congestion-treatment abandoned.

(3.) The most rapid results are obtained by the simultaneous use of the congestion method and the injection of the emulsion of iodoform and glycerine.

(4.) Where sinuses persist in spite of marked improvement in other respects, the iodoform and glycerine is injected into the neighbourhood of the sinus, and if sequestra exist, they are removed by operation.

(5.) Good results are obtained by the congestion-method in tubercular disease of the testicle and of tendon-sheaths.

II. Gurlt of Berlin.—FOURTH REPORT ON ANÆSTHETIC STATISTICS IN GERMANY (*Transactions of German Society of Surgery*, 1894):—

The report for the current year deals with a total of 52,384 administrations, with 21 deaths = 1 in 2494, made up as follows:—

Chloroform in -	33,083	cases,	1 death in	1946.
Ether - -	11,669	„	1 „ „	5834.
Chloroform and ether	3,896	„		
A.C.E. mixture -	750	„		
Bromide of ethyl	2,986	„		

Chloroform has been used less frequently during the current year (33,083, against 38,400 in 1893), while the number of ether administrations has increased (11,600, against 6,200 in 1893). All administrators refer to the considerable increase of secretion of mucus and saliva caused by ether and the tendency to the development of bronchitis and pneumonia. Pictet's "ice-chloroform" was used in 3182 of the above cases, and there were two deaths.

If the *four years* during which statistics have been collected be taken together, there is obtained a total of—

166,812	chloroform cases with	63	deaths =	1: 2,647.
26,320	ether „ „	2	„	1:13,160.
8,014	chloroform and ether	1	„	1: 8,014.
4,190	A.C.E. mixture -	1	„	1: 4,190.
7,541	bromide of ethyl -	2	„	1: 3,770.
597	Pental - -	3	,	1: 199.

III. Sapiejko (of Kiev).—TREATMENT OF URETHAL DEFECTS BY THE TRANSPLANTATION OF MUCOUS MEMBRANE FROM THE LIP (*Annales des Maladies des Organes Génito-Urinaires*, August 1894):—The practice of transplating grafts of mucous membrane to repair defects in the conjunctiva has yielded good results. Sapiejko claims to have achieved considerable success by employing the same principle in the restoration of portions of the male urethra, which have been destroyed by injury or by stricture. The grafts are taken from the patient himself, preferably from the mucous membrane lining the lower lip; they may be of considerable size, 7-8 cm. long, 2 cm. wide. The graft is fixed in the perineal wound by catgut sutures, at either end to the divided urethra, and along its margin to the adjacent tissues. The wound is left open, a catheter is introduced into the bladder from the perineum, and a suitable dressing applied. When the graft has firmly united, the perineal wound is closed by sutures, and a catheter is inserted from the meatus. In the cases quoted in illustration of the method, a full-sized bougie could be passed with ease as long as two years after the operation.

IV. Sieur (Paris).—SURGICAL TREATMENT OF TRAUMATIC RUPTURES OF THE BLADDER (*Archives Générales de Médecine*, March 1894).—(1.) Surgical interference is the only method of treating rupture of the bladder. (2.) To be successful, interference must be early, especially in intra-peritoneal rupture or if there be a fracture of the pelvis. (3.) In intra-peritoneal rupture, a median laparotomy is to be performed, with the object of suturing the bladder hermetically, and, if necessary, also of draining the peritoneal cavity. (4.) If the rupture be extra-peritoneal the choice will lie between an incision above the pubis (as in suprapubic cystotomy) and symphysiotomy, in either case, refraining from opening the peritoneal cavity unless there exist a doubt as to the integrity of the abdominal viscera; the bladder is to be sutured if possible, in preference to drainage. (5.) For drainage, the hypogastric wound should be sufficient; the perineal incision being made only in cases where there is infiltration of urine or where the rupture is in the vicinity of the neck of the bladder. (6.) If suture of the rent in the bladder be impossible, the viscus should be drained by a catheter and syphon tubes.

Part Fourth.

MEDICAL NEWS.

MULTIPLE PAPILLOMATA OF THE LARYNX IN CHILDREN.

We are requested to publish the following:—

Being occupied with a paper upon the treatment of multiple papilloma of the larynx in children, I may remark that there is very great variance of opinion as to the most satisfactory method of treatment. Certainly one must differentiate, for one cannot and dare not treat all cases alike; but even in the important point whether it is better to operate endo-laryngeally or surgically, or to treat the case in some other way, there is no unanimity. It would be of great value to obtain the opinions of a large number of observers, and so to decide upon the method of greatest utility. With this object in view, I beg all surgeons and laryngologists to give me full details of any cases they have had under their care, and kindly to answer me the following questions:—

1. Age and sex of the child; occupation of the father.
2. Symptoms (hoarseness, dyspnœa, etc.); laryngoscopic appearance.
3. Method of operation, with the date.
4. Result of operation; also in regard to voice and breathing. (Death, cause? Recurrence, when? Recovery, date of last examination.)
5. Have these cases been already published? If so, at what time, and where?

My best thanks are offered in advance to all those gentlemen who will kindly co-operate with me in this matter.

Dr Rosenberg,
I. Assistant of the Policlinic for Throat and Nose in the University.

Berlin, N.W., Mittelstr. 55,
Septbr. 10, 1894.

How should Lady Doctors Dress?—We quote this sensible little article from advance sheets of the first number of the *Pittenweem Medical Gazette.* If our esteemed contemporary always writes on such subjects in such plain language, we fear his life may be a short one, as it certainly will be a lively one:—

"A woman who has had the force of character to commence—and mental and physical strength to carry through—the study of medicine, and who accepts the responsibilities of a medical practitioner by putting up her doorplate, should surely dress in a manner befitting her station. The ordinary doctor of the other sex endeavours, by his frock coat, subfusc trousers, and the tall hat of civilisation, to dress in a manner suiting the conventions. Not for him in town are the loose knickerbockers, comfortable stocking, and the Keir-Hardie cap. Why should the young medical woman go about in a hat bedizened with artificial flowers or a gull's wing? in a dress restless with ribbons, and with skirts trailing in the dust or mud? Is it beyond the wit of woman to devise some kind of sensible dark cloak and gown, and suitable head-gear, that may at once denote the professional woman and make her work easier? The nurse's uniform is not only useful and a protection, but exceedingly becoming. Might not the lady doctor take a hint from it?"

Our Fife editor is a bold man, but there is sense in what he says.

TABLOIDS.—We are gratified to learn that in connexion with the Antwerp International Exhibition, Messrs Burroughs, Wellcome, & Co. have not only been awarded a grand prize for their Tea Tabloids, but have also received the Congo Red Cross Society's Diploma of Honour for Medicine Chests containing Tabloids of compressed drugs.

MESSRS ALFRED BISHOP & SONS, LIMITED, of 48 Spelman Street, London, have, we understand, received a Gold Medal at the Antwerp Exhibition for Citrate of Caffeine, Citrate of Magnesia, and other Granular Effervescent Preparations, of which they were the original inventors.

SCIENCE SIFTINGS CIGARETTES.—We have received a sample of these cigarettes from the Science Siftings office, London. The cigarettes are made of a sound Turkish tobacco. The end of the cigarette is tipped with Japanese straw, which is a very great improvement on the gold or silver tips sometimes seen. In the cigarette is placed, near the mouth-piece, a small plug of cotton wool, which is intended to act as a condenser of the nicotine.

The cigarettes have a pleasant, mild flavour, and, as they are sold at a moderate figure, should be popular.

PUBLICATIONS RECEIVED.

Dr G. APOSTOLI,—Travaux d'Électrothérapie Gynécologique. Société d'Éditions Scientifiques, Paris, 1894.

GEORGE W. BALFOUR, M.D., LL.D., etc.,—The Senile Heart: Its Symptoms, Sequelæ, and Treatment. A. & C. Black, London, 1894.

C. GORDON BRODIE, F.R.C.S.,—Dissections Illustrated: A Graphic Handbook for Students of Human Anatomy. Part 3. Whittaker & Co., London and New York.

ARCH. K. CHALMERS, M.D., D.P.H. Cantab.—A New Life Table for Glasgow, based on the Mortality of the ten years 1881–90. Glasgow, 1894.

Sir J. FAYRER, K.C.S.I., M.D., F.R.S.,—On Preservation of Health in India. Macmillan & Co., London, 1894.

Rev. C. G. K. GILLESPIE, A.K.C., A.C.P.,—The Sanitary Code of the Pentateuch. The Religious Tract Society, Lond., 1894.

E. B. GLEASON, S.B., M.D.,—Essentials of the Diseases of the Ear. W. B. Saunders, Philadelphia, 1894.

Prof. D. J. HAMILTON, M.B., F.R.C.S.E., F.R.S.E.,—A Text-Book of Pathology: Systematic and Practical. 2 Vols. Macmillan & Co., Lond. and New York, 1894.

HERBERT JUNIUS HARDWICKE, M.D.,—Alpine Climates for Consumption. J. & A. Churchill, London, 1894.

ERNEST HART, D.C.L.,—The Nurseries of Cholera: Its Diffusion and its Extinction. Smith, Elder, & Co., London, 1894.

T. MARK HOVELL, F.R.C.S. Ed., etc.,—A Treatise on Diseases of the Ear. J. & A. Churchill, London, 1894.

Prof. H. MACNAUGHTON-JONES, M.D., etc.,—Practical Manual of Diseases of Women, and Uterine Therapeutics. Baillière, Tindall, & Cox, London, 1894.

Journal of the Scottish Meteorological Society, with Tables, for the year 1892. Wm. Blackwood & Sons, Edin. and Lond.

E. J. LAWLESS, M.D., D.P.H.,—First Aid to the Injured, and Management of the Sick. Young J. Pentland, Edinburgh and London, 1894.

Prof. PAUL LEFERT,—La Pratique Journalière de la Médecine dans les Hôpitaux de Paris. J. B. Baillière et Fils, Paris, 1895.

M. M. PATTISON MUIR, M.A., and H. FORSTER MORLEY, M.A., D.Sc.,—Watts' Dictionary of Chemistry. Vol. 4. Longmans, Green, & Co., London, 1894.

Prof. FREDERICK G. NOVY, Sc.D., M.D.,—Directions for Laboratory Work in Bacteriology. George Wahr, Ann Arbor, Mich.

Prof. WM. OSLER, M.D.,—Lectures on the Diagnosis of Abdominal Tumours. D. Appleton & Co., New York, 1894.

Prof. JOSEPH H. RAYMOND, A.M., M.D.,—A Manual of Human Physiology. W. B. Saunders, Philadelphia, 1894.

SEYMOUR TAYLOR, M.D.,—Index of Medicine. Smith, Elder, & Co., London, 1894.

Thirtieth Report of the Trustees of the Boston City Hospital for year 1893–94.

JOHN C. THOROWGOOD, M.D., F.R.C.P., etc.,—Asthma and Chronic Bronchitis. Baillière, Tindall, & Cox.

Wright's Improved Physicians', Surgeons', and Consultants' Visiting List, 1895. John Wright & Co., Bristol.

Part First.

ORIGINAL COMMUNICATIONS.

I.—THE PHYSIOLOGY OF THE CARBOHYDRATES—OUR PRESENT KNOWLEDGE OF THEIR RELATIONS TO THE ANIMAL ECONOMY.

By D. Noël Paton, M.D., B.Sc., F.R.C.P. Ed., Lecturer on Physiology, School of Medicine, Edinburgh; Superintendent of the Research Laboratory of the Royal College of Physicians of Edinburgh.

The appearance of Dr Pavy's *Physiology of the Carbohydrates* necessitates a reconsideration of the generally-adopted views in regard to the part played by sugar in the animal economy, and in regard to the relationship of the liver to the substance. Are we still justified in adhering to the solution of these questions, so brilliantly expounded by Claude Bernard in the middle of the century; or must we once and for all abandon them?

Bernard taught that the liver manufactures sugar for the use of tissues, and that it can store up as animal starch or glycogen any excess of sugar over that immediately required; and that it can reconvert this into sugar and give it out to the tissues as required.

Dr Pavy holds that the liver does *not* manufacture sugar and that sugar is *not* used in the tissues, but that the liver simply catches the sugar to convert it to glycogen, and that this glycogen is *not* reconverted to sugar, but is changed to some other substance or substances.

The teaching of Bernard has not only been accepted by physiologists; but it has directed the practice of physicians in the treatment of diabetes for the last thirty years.

The outcome of the work of a lifetime by an investigator so well known as Dr Pavy must be received with respect. But the mere fact that it is the work of such a man does not permit of an unquestioning acceptance of his conclusions. The ordinary practitioner is too apt to adopt theories on the mere authority of a name, but the scientific physician must remember *jurare in verbis nullius magistri*, and must subject all theories to a careful investigation.

Again, the fact that Dr Pavy bases upon his conclusions in regard to the physiology of the carbohydrates a pathology and therapeutics of diabetes, the fact that the acceptance or rejection of his theories must modify the mode of treating diabetes, necessitates on the part of the physician a specially searching scrutiny of the work. Each piece of evidence must be weighed with impartiality, and each link in the chain of reasoning must be individually tested.

This cannot be done by a mere perusal, however careful, of Dr Pavy's book. A knowledge of the immense amount of work which has been accomplished by many other observers is essential, and this is not to be obtained from his book. For Dr Pavy gives hardly any consideration of the work of others. Whether he has not studied their work, or whether, having studied it, he has come to the conclusion that it is not of sufficient value to require consideration at his hands, we do not know. But much of that work has been accomplished by, and in the laboratories of, physiologists of reputation, and has been accepted by their *confrères* throughout the world, and we consider that Dr Pavy would have dealt more fairly with his readers who are not professed physiologists had he placed before them the results of other investigators, and had he attempted to overcome the mass of evidence so opposed to his own views. Had he succeeded in so doing he would have done more to realize his hope (p. 221) that the glycogenic theory "will come to be entirely eradicated, and reference to animal glycogenesis, as now understood, will be expunged, except as a matter of history, from works on physiology." By glycogenesis is meant the whole process of the formation of sugar in the organism. In reviewing the evidence in favour of the prevalent teaching on the one hand and of Dr Pavy's theories on the other, we may best proceed by considering the subject under the various divisions adopted by Dr Pavy.

Chemical Nature of Carbohydrates.—Until recent times the true chemical nature of these bodies was not understood, but the researches of Emil Fischer have shown that the simplest carbohydrates—the old grape sugars or glucoses—are aldehydes or ketones—of a hexatomic alcohol having the formula C_6H_8 $(OH)_6$. Just as by oxidising ordinary alcohol C_2H_6O the aldehyde C_2H_4O is formed, so from mannitic alcohol the molecule $C_6H_{12}O_6$, representing the simplest carbohydrate, is produced. Such carbohydrates are spoken of as *Monosaccharids*, and the best known are glucose, lævulose, and galactose.

These monosaccharid molecules may link together (polymerise) with the loss of H_2O. When two such molecules thus unite *Disaccharids* are produced, and these readily split to yield their constituent monosaccharids. The most important of these are maltose formed from the molecules of dextrose, cane sugar formed from a molecule of dextrose connected to a molecule of lævulose, and milk sugar, in which dextrose and galactose are linked.

Further polymerisation and dehydration produces a set of bodies having molecules of larger and larger size. The simpler members of this series—those most nearly resembling the sugars—

are called dextrins, while among the more complex are starch and glycogen. The whole series may conveniently be called *Polysaccharids*. In some of the higher members of the group—*e.g.*, in starch—more than a hundred monosaccharid molecules may be connected together. These polysaccharids tend to break down into their constituent disaccharid and monosaccharid molecules.

A comprehension of these facts greatly facilitates the study of the changes which these substances undergo in the animal body.

It is with the chemical nature of the carbohydrates and with the compounds which some of them form with phenylhydrazin that the first three chapters of Pavy's book are concerned.

The first point in connexion with the relations of sugars in the body is—

A.—*Are the sugars entirely derived from the carbohydrates of the food, or can they be formed from the proteids,*[1] *or from fat already in the body.*

Proteids as a source of Carbohydrates.—It is now universally admitted, on the evidence of the formation of glycogen from proteids, that in the laboratory of living protoplasm carbohydrates may be formed from proteids. The careful work of Voit and his scholars leaves no doubt on this subject. It is further indicated by the following facts:—*1st.* That even when all the glycogen has been made to disappear from an animal, an enormous sugar formation, with a corresponding disintegration of proteids—in fact, a diabetes—may be produced by the administration of phloridzin (von Mering). *2nd.* That in an animal deprived of glycogen by strychnine poisoning, this carbohydrate appears again in liver and muscles under the influence of chloral, even though the animal is starved. But how is this brought about? Does the proteid molecule contain carbohydrate molecules which are set free when it breaks down; or must the elements of the proteid molecule be more completely broken down, and then, after becoming part of the protoplasm, be changed into the carbohydrate molecule?

According to Pflüger (*Pflüg. Arch.*, 1888) the latter is the probable explanation. He points to the fact that in the formation of urea not only is the proteid molecule broken down, but the derived ammonia bodies have to be built up to form urea. In the formation of fats from carbohydrates the same breaking-down and reconstruction must occur. The same form of glycogen is produced from dextrose, from lævulose, and from the proteids, and hence the protoplasm must either first make these substances part of itself before changing them to glycogen, or without making them part of itself must convert them to some common forerunner of glycogen, like glucose.

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[1] By proteids we mean the group of albuminous substances. The term has been applied to compounds of these albuminous substances with other bodies, but we prefer to call such compounds conjugated or compound proteids.

But Dr Pavy attempts to furnish evidence that the proteid molecule does contain a carbohydrate moiety, which is the source of carbohydrates formed from proteids.

He gives experiments to show that under the influence of caustic potash and sulphuric acid, or of sulphuric acid alone, or of peptic digestion, proteids yield a substance having a reducing action on ammoniated cupric oxide, yielding a crystalline osazone with phenylhydrazin, and giving the naphthol and thymol reactions for sugar, but not undergoing fermentation and having no optical activity.

According to Dr Pavy the amount produced is small, only about 2 to 3 per mille. The fact that the percentage composition of peptones is the same as that of the native proteids from which they are derived is opposed to the view that any molecule rich in carbon is split off in this manner by peptic digestion.

The existence of a carbohydrate molecule in mucin has been already demonstrated by Landwehr. But mucin and its allies are really combinations of a proteid with a carbohydrate.

It is *possible* that the proteid molecule in splitting *may* yield a carbohydrate. But we have to consider the question of whether the evidence offered *proves* that such a carbohydrate molecule is yielded. Now, the carbohydrates are not the only bodies which yield crystalline compounds with phenylhydrazin. A glance at Beilstein's *Organic Chemistry* shows that a vast number of substances give such crystalline compounds. It is only when an elementary analysis of the compound is made that it can be definitely concluded that a carbohydrate is a constituent part. Such analyses are given by Baisch in his researches on the carbohydrates of the urine, and by Bial in his observations on the sugar produced by the ferment of the blood, and the conclusions of these authors are thus placed beyond doubt. But Dr Pavy does not give such analyses, and without them we are not justified in accepting his conclusion that the substance is a carbohydrate.

The researches of Hammarsten and Kossel, which at first sight may appear to support this theory, are found upon careful examination to have no bearing upon it. Prof. Hammarsten (*Ztsch. f. phys. Chem.*, Bd. xix. p. 19) has recently described a product of the splitting of the complex nuclein[1] of the pancreas, which yields a crystalline osazone, which reduces Fehling, and which he considers to be a carbohydrate, although he has been unable to prepare it in sufficient quantity for analysis. Kossel (*Arch. f. Phys.*, 1893, p. 157) shows that the carbohydrate which he is able to obtain from the nuclein of yeast is derived not from the proteid, but from the nucleic acid part of the substance. Thus the researches of these two chemists cannot be considered as giving support to the theory that the proteid molecule contains a carbohydrate part.

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[1] Nucleins are compounds of a complex phosphorus-containing acid, nucleic acid, linked to varying quantities of a proteid.

Fats as a source of Carbohydrates.—The possibility of the conversion of fats to carbohydrates in the animal body has never, so far as I am aware, been fully investigated. Seegen maintains that fats do yield sugar in the body, but his experiments are unsatisfactory.

B. *Methods of Analysis for the Carbohydrates.*

To the general medical reader a detailed consideration of the methods of analysis is not of interest. But in estimating the value of the results of any investigator, these methods have to be most carefully examined.

By Dr Pavy's method of extracting the sugar by alcohol, two dangers are run. First, that all the sugar is not removed (Schenk, *Pflüg. Arch.*, Bd. xlvi.); and, second, that by using strong alcohol the sugars less soluble in alcohol, such as maltose, are not completely taken up, or by using a weaker alcohol that some of the lower dextrins are also taken up with sugar. We believe that this will in part explain the curious results obtained by Dr Pavy on boiling his so-called sugars with sulphuric acid,—results which lead him to conclusions as to the nature of the sugars in opposition to the observations of other chemists. There is also the danger that the alcohol may take up from the blood or tissues reducing substance other than sugar.

In the estimation of glycogen the researches of Vintschgau and Dietl (*Pflüg. Arch.*, Bd. xiii. p. 253), which show that boiling with potash does destroy glycogen, are ignored (p. 152).

C. *Relationship of Ingested Carbohydrates to the Animal Body.*

1. *The changes which the Carbohydrate of the food undergo in the Alimentary Canal.*—The most important recent advance in this subject is the demonstration of the important action of the succus entericus and intestinal mucosa in bringing about the complete conversion of polysaccharids and disaccharids to monosaccharids. Starches and maltose are entirely converted to dextrose, while cane sugar is split into dextrose and lævulose. It is probable that the conversion of starch is not always completed before absorption, and that some of the lower dextrins may pass through the intestinal wall along with dextrose. Cane sugar, too, when in excess, may escape conversion, and may pass into the blood stream as such. Curiously enough, milk sugar does not appear to be acted upon unless by the bacteria of the intestine, which split it up in part to lactic acid, etc. An excellent account of these changes will be found in von Noorden's *Pathologie des Stoffwechsels*, p. 15,—a work well worthy of study by British physicians. Gamgee's *Physiological Chemistry*, vol. ii. p. 412, may also be consulted.

2. *How is the Sugar absorbed?*—In former times it was supposed to diffuse through the intestinal wall into the blood. The magnificent researches of Heidenhain on the physiology of the intestine have shown that diffusion plays a small part, if any, in the absorption of the contents of the alimentary canal, and that it is the function of the living epithelial cells which line the canal to take up the digested material. Into the evidence upon which this important conclusion is based we cannot at present enter (see *Pflüger's Arch.*, Bd. xliii.).

3. *How does the Sugar reach the system? Does Sugar pass through the Portal Blood or into the Chyle?*—This question Pavy does not discuss, but previous researches, and among others those of von Mering, and of Munk and Rosenstein, show that the main channel of absorption is the portal blood,—only about ½ per cent. being absorbed in the lymph stream.

4. *In what form does the absorbed Carbohydrate reach the Liver? What is the form of Sugar found in the Portal Blood?*—In every case but one Dr Pavy finds a sugar which has its reducing power increased by boiling with H_2SO_4, and which is therefore either not glucose, or glucose mixed with some other substance having a reducing power increased by this process. The fact that in the same experiment this increase of reducing power varies from 10 to 20 or 30 per cent., militates against any definite conclusions being drawn from the observations. The same phenomenon has been observed by von Mering, by Bleile, and by Seegen. Bleile concludes that a dextrin is absorbed from the intestine along with glucose.

5. *The Liver in relationship to the Sugar derived from Ingested Carbohydrates.*

(i.) *The evidence afforded by an examination of the Blood going to and coming from the Liver.*—The flow of blood through the liver is so enormously rapid that a very small increase in the percentage amount of sugar would indicate an enormous production in the course of twenty-four hours. From analyses of the blood taken post-mortem—through immediately post-mortem—from the right side of the heart, and from a comparison of these analyses with analyses of the blood in the portal vein, Dr Pavy concludes that no appreciable amount of sugar comes from the liver. According to his results the blood of the heart contains 0·6 to 1 per mille. of sugar, the portal blood contains 1·5 to 4 per mille. according to the amount of absorption of carbohydrate going on.

Now, this method of experiment is not in any way calculated to elucidate the question. In the first place the analyses of the heart blood and of the portal blood were not made at the same time or even in the same animal. Secondly, the animal was dead; and Dr Pavy has insisted that in the case of the liver post-mortem changes commence at once. Such changes may also occur in the blood. That they do occur later is admitted by Dr Pavy himself. And lastly, the heart blood is the blood from the liver enormously diluted with blood from the rest of the body; and hence if the blood from the rest of the body is poor in sugar any increase in the sugar in the blood from the liver will not be manifested.

In this connexion, especially, a discussion of the results of other investigations is required. It is not sufficient to say,—"To obtain such a specimen directly from the hepatic veins is, I consider, a procedure attended with so much liability to the introduction of error as to be unsuited for employment." Seegen adopts this method, using in many cases an ingenious catheterisation of the hepatic vein, and in a series of 64 experiments finds a marked increase in the sugar of the hepatic blood in unæsthetised animals, and in animals anæsthetised with chloroform, morphin, and in those under the action of curare. In the experiments of Bock and Hoffmann (1874) an increase is also shown; while even the experiments of Bleile (1879) and of Abeles (1887) show in some cases an increase. The question of whether Abeles is right in concluding that the increase is the result of injury of the liver as the result of the experiment, deserves consideration. That stimulation of the cœliac plexus, and possibly of the nerves of the liver, increases sugar production, is shown by the experiments of Cavazzani (*Annali di Chimica e di Farmacologia*, vol. xx. p. 164), but it appears to us that the method of *direct* catheterisation of the hepatic vein without opening or ligaturing the inferior vena cava is a procedure attended with little or no disturbance of the liver, and that it is therefore calculated to yield results of value. To our mind the evidence of an increase of sugar in the hepatic blood is conclusive. But supposing it were not so, there is yet further strong evidence that the liver is constantly pouring sugar into the blood. Bock and Hoffmann have succeeded in excluding the liver from the circulation in dogs, and they find that the blood rapidly becomes free of sugar. Minkowski, taking advantage of the communication between the portal vein and the renal vein in the goose, excluded the liver from the circulation without bringing about the vascular disturbance caused in mammals. He, too, found that the blood rapidly became free of sugar. There can be no two interpretations to these experiments. Even Lieblein, who has recently attempted to throw the liver out of action by injecting weak acid into the bile ducts, and who has thus succeeded in getting the liver free of glycogen, and who finds that the injection of phloridzin still causes glycosuria, concludes from this, not that the liver does not make sugar, but that other organs of the body can also do so.

The mass of evidence, then, seems to us opposed to Dr Pavy's conclusion that the liver does not produce sugar, and confirms Bernard's conclusions that sugar is produced in the organ.

I have not here considered it necessary to re-state the well-known experiments by which Bernard was led to his conclusions. These are known to every medical man.

(ii.) *The evidence afforded by the Liver itself of the stoppage by it of Sugar derived from Digestion.*—The well-known facts of the accumulation of glycogen under carbohydrate, and to a lesser extent under proteid diet, are stated by Dr Pavy. But the important work of Voit and other members of the Munich school upon the sugars which can and the sugars which cannot be stored as glycogen is not touched upon. These researches bring out the interesting point that lactose and galactose—one of its derivatives—cannot be stored as glycogen. The idea is advanced by Pavy that the glycogen which is formed in the liver on a proteid diet is derived from the carbohydrate which is supposed to split off from the proteid molecule during digestion. Certainly the amount of glycogen stored under a proteid diet is small, but then if a carbohydrate were liberated as contended by the author, and to the extent of ·2 per cent. as suggested by him, it would hardly afford an adequate supply of a material such as glycogen, which is, as he admits, constantly being removed from the liver.

(iii.) *The general relationship of Glycogen as a Constituent of the Liver.*—In this connexion, and probably since Dr Pavy wrote this part of his work, Fraenkel has again brought forward a view long ago hinted at by Langley, that the glycogen is not contained as such in the liver cells, but as a compound with the protoplasm. This seems to be indicated by the fact that although glycogen is soluble in cold water, cold water does not take it up from the liver, and by the fact that after treatment with alcohol it is almost impossible to extract the substance. The action of heat, of acids such as trichloracetic acid, or of alkalies, are required to break down the combination. So far, however, the existence of this compound has not been definitely proved.

(iv.) *The Liver in relationship to Sugar.*—Pavy's contention is that glycogen is converted to sugar only after death, and as the result of a ferment. In the first place he assumes, without sufficient consideration, that a ferment is the only possible cause of such a change. No one denies that a ferment which can convert glycogen to a sugar may be extracted from the dead liver, from the blood, and, in fact, from all the tissues. Such a ferment may conveniently be called an amylolytic ferment, and its action amylolysis. Certainly Bial and Rohmann have brought forward strong evidence that such a ferment exists in the living blood and lymph. The former of these contends that it is through this ferment that glycogen is changed to sugar during the life of the animal. A good account of his observations by Dr Halliburton will be found in *Science Progress*, vol. i. I have endeavoured to show (*Philosophical Transactions*, 1894), that the conversion of glycogen to sugar takes place during the life of the liver cells, and as a result of their metabolism. When an animal is killed the cells of the different organs continue to live for some time. I have shown that it is in the first half hour or so after an animal is killed that the conversion of glycogen to glucose goes on most rapidly; and further, that by pounding the liver with fine sand so as to destroy the cells this rapid conversion is stopped. Again, I have endeavoured to show that various agents which diminish the activity of protoplasmic changes diminish the rate of this early amylolysis. After the cells have ceased to live, and after they begin to manifest structural post-mortem changes, a slow amylolysis continues as the result of the development of a ferment.

Dr Pavy's demonstration of the fact that liver substance coagulated by alcohol, when freed from alcohol and placed in water, has an amylolytic action, does not "afford absolute proof, if, indeed, the idea could now exist in the mind of anyone that proof was wanting—that the phenomenon is not dependent upon the metabolic power resident in the living cell of the liver." No one denies that such a ferment may develop, though Dastre believes that micro-organisms have usually much to do with such a conversion.

The evidence seems to favour the view that the metabolism of the living cells *can* change glycogen to glucose just as zymogens are changed to ferments in the cells of the pancreas. The brothers Cavazzani, as a result of their recent experiment on stimulation of the cœliac plexus, conclude,—"It appears to us possible to affirm that the material from which the liver principally produces glucose is glycogen, and we would consider the production of glucose as a process of secretion." So far it is only contended that the metabolism of the cells *can* change glycogen to glucose.

Is hepatic glycogen changed to glucose in the normal state of the animal? Pavy argues against this as follows. In the first ten or twelve minutes after death 10 or 12 parts per 1000 of sugar is formed. At this rate all the glycogen would disappear in three-quarters of an hour. Hence, if amylolysis goes on at the same rate in the living animal (we have in the *Philosophical Transactions* argued against this), in starvation, sugar would not be found in the liver (he himself contends against the view that it is so found) because the glycogen would all be used up. Surely he is the last person to use this argument, since he himself contends that carbohydrates are yielded by the splitting of the proteid molecule, and proteids are constantly split up during starvation.

Dr Pavy (p. 225) also advances the following argument. He takes the case of the rabbit, in which animal the alimentary canal is always more or less full. He says that the portal blood always contains more sugar than the blood of the general circulation, and argues that therefore glycogen must be changed to something not sugar. We do not accept his assertion, but accepting his own figures, what is the state of matters? The amount of sugar in the portal blood of a rabbit in full digestion varies enormously—from

1·44 to 4·6 per mille. I cannot in his book find any analyses of the sugar in the blood of the general circulation of the rabbit, but in the dog (p. 168) it varies from 0·8 to 1·23 per mille. Now, if sugar is being constantly destroyed or got rid of from the blood by the kidneys, as we shall afterwards see is maintained by Dr Pavy, the amount of sugar leaving the liver may be sufficiently great to prevent glycogen accumulating, without at the same time raising the percentage of sugar in the general circulation.

It is curious to notice that at this point Dr Pavy joins issue with an opponent to his views, and to the view of Bernard, that glycogen is the forerunner of sugar. Dr Seegen of Vienna, who most strenuously contends that the liver is the great sugar producer in the body, denies that the sugar is derived from glycogen.

Seegen rests his conclusion on the following two arguments:—The glycogen rapidly disappears from the liver during starvation —sugar is constantly produced, therefore the glycogen is not the source of sugar. If we look upon glycogen simply as a form in which sugar, when in excess of that required in the organism, is stored, such an argument has no weight. If sugar is wanted, the glycogen must immediately be converted into sugar, and thus it cannot accumulate in the liver.

The second argument is based upon a series of experiments in which Seegen and Kratschmer endeavoured to show that in the liver after the death of the animal, sugar accumulates to a greater extent then glycogen disappears. The experiments of Böhm and Hoffman, and of others, have yielded results opposed to these. But even supposing that Seegen and Kratschmer are correct, their experiments do not show that sugar is not formed from glycogen.

The liver cells can form carbohydrates out of proteids, and so long as they continue alive, so long will they produce carbohydrate not only from their stored glycogen, but from the proteids they contain.

And against these experiments have to be put the observations that the living cells *do* convert glycogen to glucose, a fact admitted even by Seegen.

The evidence, then, is all in favour of the conversion of glycogen to glucose in the liver, probably by the action of the liver cells.

But admitting that glycogen is changed to glucose during life, the possibility that this conversion is caused by the amylolytic ferment found by Bial and Rohmann in the blood must be considered. This ferment undoubtedly forms glucose, and not maltose, the sugar produced by most ferments. It seems to us, however, that so long as this ferment is in the blood and lymph and the glycogen in the cells, it can hardly act, and we believe that the facts already stated indicate that it is not by a ferment, but by the living action of the cells, that the conversion is brought about. Bial argues that the conversion of glycogen is quicker in the post-mortem liver kept in blood than in that kept in salt solution, because the blood contains the ferment. The result may also be explained on the ground that the vital action of the liver cells is better carried on in blood than in salt solution.

6. *Blood in Relationship to Sugar.*—As to the nature of the sugar in the blood, Pavy states (p. 157) that "the sugar met with is usually one possessing a cupric oxide reducing power more or less below that of glucose." This statement is in direct opposition to the observations by Seegen and to the recent observations of Pickhardt (*Ztch. f. phys. Chem.*, Bd. xvii), which satisfactorily prove that the sugar of blood in all its reactions corresponds to glucose.

Pavy no longer maintains, as he once did, that sugar is absent from the blood. He no longer maintains, as he did at a somewhat later date, that it is only a trace—about 0·5 per mille., but he now gives results more nearly corresponding to those of other observers. His results are still lower than those usually obtained. He gives from 0·6 to 1 per mille., while Seegen finds about 1·5 per mille. on an average. It is not sufficient to argue that Seegen's results are erroneous because "the larger quantities are incompatible with the state presented by healthy tissue."

7. *The Utilisation or Non-utilisation of Sugar in the Body.*—Is sugar used as the blood passes through the muscles and other tissues? Does the venous blood contain less sugar than arterial blood? Bernard answered these questions in the affirmative; but his methods were defective, and his results must be rejected. Chauveau and Kaufmann have endeavoured to demonstrate that this utilisation of sugar takes place in the muscles of the jaw of the horse, and that it is increased during activity. But, as Seegen indicates, the differences obtained are within the limits of experimental error. Bock and Hoffmann, Abeles and Seegen, and also Pavy, get no constant difference.[1]

Seegen points out (*Cbt. f. d. Physiol.*, Bd. viii. No. 13) that if the amount of sugar used in muscle was as great as the researches of Chauveau indicate, this would imply a consumption of sugar far in excess of its supply. By an analysis of blood going to and coming from muscle we cannot hope to elucidate the question of whether sugar is used in the tissues.

Have we any evidence that carbohydrates are a source of the energy of muscular work? We have seen that the examination of the blood going to and coming from muscle tells us nothing. But the facts so clearly established by Külz, that glycogen accumulates in muscle at rest and disappears from muscle at work, and that the tetanic seizures of strychnine poisoning cause a diminution in muscle glycogen, point to carbohydrates as *a* source of muscle energy.

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[1] In the last two numbers of the *Cbt. f. d. Phys.*, Seegen gives a further series of experiments on this subject, in which he shows that direct stimulation of the muscles usually leads to a diminution in the sugar of venous blood. Stimulation through the nerve is accompanied by an increase. The glycogen of the muscle is always diminished.

It would seem that during rest muscle takes up sugar from the blood, and stores it as glycogen, and that this glycogen is used as a source of the energy in the working muscle. That the carbohydrates are such a source of the energy of muscle work is taught almost universally by physiologists, though some of the experiments upon which this view is based—such as that of Fick and Wislecenus—are of no value.

Quite recently Pflüger has attacked this view, and has tried to re-establish the old teaching of Liebig, that the proteids are the only source of muscular energy. An admirable statement—though without adequate discussion—of Pflüger's contention will be found by Dr Starling in *Science Progress*, vol. i. It is impossible in the present article to consider this important question. To my mind the prevalent teaching seems correct, and Pflüger's results are quite capable of being brought into accord with the view that carbohydrates are a source of energy.

The recent interesting work of Lépine and Barral on the destruction of glucose by a ferment in the blood must be considered. It cannot be summarily dismissed as it is by Dr Pavy (p. 177) by saying, "Sugar does not reach the general circulation as the glycogenic doctrine implies, the *raison d'être* of a glycolytic ferment in the blood does not exist, and the question about glycolysis in the blood is devoid of the physiological significance that would otherwise belong to it." Far from this being the case, the recent discovery of the fact that after removal of the pancreas this glycolytic action of the blood diminishes, and the fact that extirpation of the pancreas causes, glycæmia and diabetes, renders these observations of Lépine and Barral of the greatest practical importance. Why sugar should be thus destroyed we know not; but the evidence in favour of its destruction appears satisfactory. Possibly in this ferment we have a means of getting rid of any sugar which has been allowed to pass from the liver in excess of that required by the tissue.

But Dr Pavy himself admits that sugar is present in the blood, and hence, if it is not to accumulate there, it must be changed or excreted by the kidneys.

This leads to the consideration of—

8. *The Urine in relationship to Sugar.*—Dr Pavy confirms the results of other observers that sugar in minute quantities occurs in the urine in health. He says that 0·05 per cent. is present. This is in opposition to the recent most careful observations of Baisch (*Ztsch. f. phys. Chem.*, Bd. xviii.), who finds that the sugar as ascertained after *separation* estimated by its power on polarized light amounts to at most 0·009 per cent., or estimated by its reducing power to 0·012 per cent. These results correspond closely to those of Seegen.

That the urine also contains another carbohydrate is indicated by the work of Baisch and Salkowski.

The fact that glucose when injected into the blood appears in the urine has been known for long. Pavy contends that the amount of sugar in the urine is strictly proportionate to that in the blood. His experiments on p. 189 do not substantiate this thesis, and the observations of Seegen on diabetes are opposed to the conclusion.

The most astonishing part of his experiments on this subject is that in Experiments V. and VIII. on rabbits he gets a sugar in the urine after the injection of glucose, the reducing power of which is nearly doubled by boiling! Such a fact is worthy of more than passing comment. What sugar has its reducing power thus increased? Apparently the sugar in these experiments was not isolated before it was estimated, and he has no right to assume that the increased reduction is due to a sugar.

Dr Pavy considers that any sugar which escapes into the blood is excreted in the urine. Now, during starvation the amount of glucose in the blood remains the same, and if glucose is still being excreted in the urine, this is surely the strongest possible argument for the constant formation of sugar apart from ingested carbohydrates from whatever source derived.

9. *The presence of Sugar in Muscle, Spleen, and other Organs* is considered by Dr Pavy. That carbohydrate is contained in these organs is already known, and that they have the power of forming sugar is probable. The work of Lieblein, among others, indicates this. Dr Pavy's observations seem to indicate that glucose is not *the* sugar of muscle. Now, the very careful experiments of Panormoff show that it is glucose.

10. *The Fate of Carbohydrates in the Body.* Dr Pavy maintains—

1*st.* That the carbohydrates stored as glycogen, or as they pass through the intestinal wall, go to form proteid. Possibly he is right. But to argue as he does from plants to animals is dangerous in the extreme. Though asparagin and carbohydrates may be built into the protoplasm molecules of plants, the direct experimental evidence against the utilization of the former substance in animals is very strong. There is no direct evidence for or against the view, and therefore it cannot be accepted.

2*nd.* He holds that carbohydrates are changed to fats. That carbohydrates are a source of fat in the body has been clearly demonstrated by many experimenters. The conclusion that the glycogen of the liver is changed to fat is without experimental evidence. I find, from a large series of observations not yet published, that the amount of fat in the liver bears no proportion to the amount of glycogen present. One point, however, I have found in favour of this view, and that is, that between twenty-four and forty-eight hours after food, just when the glycogen is disappearing, as shown by Prausnitz, there seems to be an increase in the liver fats. These experiments are still in progress, and at present we must regard the proof of this contention as wanting. Nor is there any direct experimental proof of the conversion of glycogen to proteid. Pflüger's recent contributions to animal metabolism are opposed to such an idea.

Dr Pavy further suggests that the epithelial cells of the intestine take up carbohydrates and convert them to fat. This theory *may* be correct, but the experimental evidence on which he bases it is defective. He feeds rabbits on oats which contain 5 per cent. of fat, and because he finds fat in the epithelial cells of the intestines, he concludes that this is derived from the *carbohydrates* of the oats. How can he tell that the fat seen in the cells is not the fat of the oats? Dr Gulland and I find that in rats, while a diet of fat causes a loading of the epithelium with fat particles, a diet of starch and sugar leaves the epithelium entirely free of fat globules. At present the proof of this theory is wanting.

D. *Physiology of the Carbohydrates applied to Diabetes.*

When Dr Pavy comes to apply his theory to diabetes it completely fails to explain the phenomena of many forms of the disease. The idea that the intestinal epithelium and the liver are two barriers against the invasion of the system by sugar, the former converting it into fat, the latter converting it into glycogen and then into fat or proteids, and that diabetes is simply a weakening of one or both of these two barriers, leaves many forms of diabetes unexplained. How will this explain cases in which glycosuria continues on a purely proteid diet? According to him it may be in part due to the carbohydrates always associated with proteids, but it may also be due to the carbohydrate part of the proteid molecule, which he has attempted to demonstrate. The existence of this carbohydrate element cannot be accepted; but supposing it does occur in the amount supposed by Dr Pavy—·2 per cent of the proteid molecule—will this explain the phenomena of the case? The following considerations show that it will not. One gramme of urea is derived from 2·9 grammes of the proteids of the food or of the body, hence 100 grammes of proteid will yield 35 grammes of urea, and, according to Dr Pavy, 2 grammes of carbohydrate. Now, every physician knows that there are cases of diabetes in which even on a proteid diet the sugar bears a much higher proportion to the urea than this. Dr Pavy, on p. 91 of his Croonian Lectures, calculates the proportion of urea to sugar as about 1 to 2. Hence this theory of the carbohydrate part of the proteid molecule cannot be applied to the explanation of such severe forms of diabetes.

Then how does this theory explain the diabetes which follows extirpation of the pancreas? Dr Pavy simply ignores this problem.

In this connexion the recently published experiments of Kaufmann are of interest. He shows that in the dog, if the nerves to the liver be cut, diabetes does not result, but that if afterwards the floor of the fourth ventricle be subjected to Bernard's diabetic puncture, glycosuria supervenes. But if the nerves to the pancreas have also been cut no such result follows. Similarly, if the nerves to the pancreas have been divided, but those of the liver left intact, glycosuria is caused. He considers that Bernard's puncture has a double action, stimulating the formation of sugar in the liver and inhibiting what he calls the internal secretion of the pancreas,—*i.e.*, the formation of the sugar-destroying substance produced in that gland. He emphasises the importance of the action of the pancreas, and points out that nervous shock may thus cause diabetes, without the presence of the organic changes in the pancreas, which, in the light of Minkowski's experiments, we should expect to find in pancreatic diabetes.

We have thus step by step considered the evidence in regard to the relation of sugar in the animal body, and it is needless to deal with Dr Pavy's summary of his conclusion in detail.

He has not proved that there is no increase of sugar in the blood leaving the liver; he has not proved that glycogen is not converted into sugar; he has not proved that sugar does not disappear in the circulation, and he has not proved that it is all excreted in the urine.

The evidence *for* the constant production of sugar in the liver, the evidence that glycogen is a source of sugar, the evidence that sugar disappears in the general circulation (I do not say is used in the tissues), is overwhelming, and thus the glycogenic theory of Bernard holds its ground unshaken.

In endeavouring to give a fair statement of the present state of our knowledge in regard to the relations of sugar in the economy I have been compelled to subject Dr Pavy's observations and theories to adverse criticism. But this I have done in no spirit of animosity, for no one can more admire the devotion with which he has given his time and energy to the investigation of a problem of such profound scientific interest and deep practical importance. The greatest compliment which one scientific worker can do another is to carefully study his work, and to frankly state his opinions upon it. For truth, like distance, is better learned by double than by single vision.

At the beginning of my paper on Hepatic Glycogenesis, published last winter, before the appearance of Dr Pavy's work, I said, "That one of the great functions of the liver is to produce sugar will not, at the present time, be denied by any physiologist," and added in a footnote, "The theory of Pavy, repeated in nearly every text-book, that the liver is a sugar-destroying and not a sugar-forming organ, rests on so unsubstantial a basis, and has been so completely refuted by the work of Seegen and other investigators, that it need not be considered."[1] To let these statements stand after the publication of Dr Pavy's book would be marked discourtesy, and I am therefore glad of an opportunity of bringing forward the evidence upon which they were made.

My object has been to put before the ordinary medical reader the evidence afforded by the many different investigators on the subject, and to indicate the interpretation of that evidence which seems most reasonable.

II.—DIGESTION OF SUGARS IN SOME DISEASED CONDITIONS OF THE BODY.

By W. G. Aitchison Robertson, M.D., D.Sc., F.R.C.P.E.

In my preceding paper I endeavoured to show the manner in which cane and invert sugar are digested and fitted for absorption in healthy individuals. In the present paper the results of an experimental investigation regarding the digestion of these sugars in some diseased conditions of the body, either general or local, are given.

I. Chronic Gastric Catarrh (*Gastritis glandularis chronica*).

The patient who suffered from this complaint was a blacksmith, aged 47. For two years he had been much troubled with heaviness, flatulence, and drowsiness after partaking of food. In his case there was no dilatation of the stomach.

Nature of the Gastric Secretion.—In the first place I examined the normal condition of his gastric secretion, by giving him 250 c. c. of cooked minced steak, after thoroughly washing out the stomach.

(1.) One hour subsequently I drew off 57 c. c. of turbid brownish-red fluid. The total acidity of this was equal to 0·3 per cent. hydrochloric acid. This acidity consisted of inorganic acid chiefly, though organic acids were also present. Peptones were present in large amount, and fibrin was digested by this fluid in three-quarters of an hour without the addition of any acid. The polariscope showed a rotation of $-4°$.

(2.) Two hours after the injection 84 c. c. of fluid similar to that just described were drawn off. The patient felt great relief after his stomach had been washed out, and experienced but little discomfort from the minced meat which he had eaten.

The total acidity was equal to 0·32 per cent. hydrochloric acid, and consisted of inorganic and organic acids in large amount; polariscope gave $-2·6°$; peptones were present, but the reaction was not so marked as after the first hour. Fibrin was digested in sixty-five minutes without the addition of any acid.

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[1] A very admirable account of Seegen's views in regard to the changes of the carbohydrates in the animal body is given to his *Die Zuckerbildung in Thierkörper*, Berlin, 1890. This has been translated into French. Chapters IX. and X., on the Formation of Sugar from Peptones and Fat, must be read in the light of Bial's more recent work.

Inversion of Cane Sugar by Gastric Secretion.

It is said that in unhealthy stomachs containing much mucus the gastric juice is very active in changing cane sugar into glucose, and that this power seems to be due to a special ferment existing in the mucus. In order to see if this were so, I performed a set of experiments on this patient similar to that on the healthy individual. At 8 A.M. he had breakfast of bread and milk. At 10 A.M. the stomach was thoroughly washed out, and three ounces of dilute Liquor Caffyn were injected. One hour later a specimen of his gastric contents was drawn off and filtered. Its initial acidity was equal to 0·06 per cent. hydrochloric acid. I then placed in a warm bath equal volumes of this gastric fluid, water, and 20 per cent. cane sugar solution, and kept all at 38° C. In one hour invert sugar was present, and at the end of two hours it amounted to 0·35 per cent.

10 c. c. gastric fluid	At 38° C. =	In 2 hours—
10 c. c. water	0·02 p. c.	0·35 p. c.
10 c. c. 20 p. c. cane sugar solution	HCl	invert sugar.

To determine whether this unhealthy gastric secretion was more active in causing the inversion of cane sugar than a pure acid solution of similar strength, I made a solution of hydrochloric acid of a strength equal to that of this gastric fluid, viz., 0·06 per cent. Equal volumes of this, water and cane sugar solution, were kept at 38° C. There was a good reduction of copper in one hour, and after two hours at 38° C. Fehling's solution showed that there was 0·434 per cent. of reducing sugar present.

10 c. c. solution of HCl = 0·06 p. c.	At 38° C. =	After 2 hours—
10 c. c. water	0·02 p. c.	0·434 p. c.
10 c. c. 20 p. c. cane sugar solution	HCl	invert sugar.

This last experiment shows that with the fluid from a case of chronic gastric catarrh there is less inversion of cane sugar than with a solution of hydrochloric acid of the same degree of acidity. This would agree with Foster's statement, but then it has happened with abnormal gastric juice and not with normal, as he implies. Still less does it show that in cases of gastric catarrh there is an increased inversion, as Schiff states.

Absence of Inversive Ferment from Gastric Secretion.

In order to confirm my denial of the presence of an inversive ferment in the gastric mucus, I modified the preceding experiment as follows:—To kill any inversive ferment which might be present, I boiled the gastric fluid for a few minutes. I then took as before equal volumes of this fluid, water, and cane sugar solution, and kept all at 38° C. There was a reduction of copper in one hour, and after two hours it amounted to 0·35 per cent.

10 c. c. boiled gastric juice = 0·06 p. c. HCl	At 38° C. =	In 2 hours—
10 c. c. water	0·02 p. c.	0·35 p. c.
10 c. c. 20 p. c. cane sugar solution	HCl	invert sugar.

The amount of invert sugar produced in this experiment is exactly the same as when unboiled gastric fluid was used. This and the following experiment prove undoubtedly, I think, that the inversion of cane sugar which takes place outside the body is not due to the presence of ferments, for the amount of invert sugar produced is the same before and after boiling the gastric fluid. There is no more inversion than can be accounted for by the acidity.

I then neutralized carefully a similar mixture of catarrhal gastric fluid, water, and cane sugar solution, and heated all on the water-bath at 38° C. There was no reduction produced in the copper solution after one hour's heating, while after two hours there was a slight reduction, but too faint to be estimated quantitatively.

10 c. c. catarrhal gastric fluid	At 38° C.	After 2 hours—
10 c. c. water	carefully	faint trace of
10 c. c. 20 per cent. cane sugar solution	neutralized.	invert sugar.

These results are similar to those obtained with healthy gastric fluid.

Digestion of Cane Sugar in Chronic Gastric Catarrh.

In the first place, I would remark that the nature of the fluid which was injected into the stomach was quite unknown to the patient, and therefore it is the more necessary to pay attention to his statements regarding pain or discomfort, or the reverse, after the reception of the sugary solutions.

(*a*.) Having washed out the stomach thoroughly, I then injected 250 c. c. of a 20 per cent. solution of cane sugar (= 50 grammes cane sugar). One hour afterwards 70 c. c. of thick whitish fluid were drawn off. This filtered with difficulty, as it was mixed with much mucus. The total acidity amounted to 0·2 per cent. hydrochloric acid. Organic and inorganic acids were present, including lactic acid. Fehling's solution showed that the sugar inverted in the stomach amounted to 0·98 per cent.

After inverting artificially 25 c. c. of this gastric fluid by heating it for two hours on a water-bath, the invert sugar present amounted to 2 per cent. Soon after receiving this sugary solution into his stomach the patient felt very sick, and vomited several times during the day. The vomit was very acid, putting his teeth "on edge," and rendering his tongue and gums tender. Pain over the region of the stomach was severe, while heartburn and flatulence were much worse than usual.

(*b*.) *Same Patient.*—At 10 A.M., on a subsequent day, I washed out his stomach. He had partaken of no food since 5 A.M., when he had some milk; yet much white curdy material came through the elastic syphon tube. This shows how slow the processes of digestion are in such cases, and for how long a time food remains in the stomach. I then injected 250 c. c. of 20 per cent. cane sugar solution.

(1.) One hour afterwards 83 c. c. of viscid white fluid, containing shreds of mucus, were drawn off. The total acidity, estimated as hydrochloric acid, was 0·133 per cent., and was due chiefly to inorganic acids; organic acids also present, lactic acid included. Invert sugar amounted to 1·47 per cent. Twenty-five c. c. of this gastric fluid were heated for two hours, to invert any cane sugar remaining. At the end of this time much of the organic acid had been driven off by the heat. The reducing sugar then amounted to 5·9 per cent.

(2.) Two hours after receiving the injection 130 c. c. of whitish fluid were drawn off. This was not so viscid as after the first hour. The total acidity was equal to 0·175 per cent. There was much more inorganic acid present than after the first hour, and lactic acid was also present. Sugar inverted in the stomach formed 1·7 per cent. After artificial inversion the invert sugar had increased to 4·3 per cent.

The patient suffered much after this fluid was injected from pain in the stomach, and heartburn, with much flatulence, and was not relieved till he had produced emesis by thrusting his finger down his throat.

(*c.*) *Same Patient.*—250 c. c. 20 per cent. solution of cane sugar injected into empty stomach.

(1.) One hour afterwards 65 c. c. of turbid white fluid were drawn off. A much greater quantity came through the tube, but I returned at once much of it back to the stomach. Total acidity equal to 0·07 per cent. HCl, chiefly inorganic; no lactic acid reaction. Invert sugar present in the stomach, 1·04 per cent. After inversion on water-bath, the invert sugar had increased to 6·6 per cent.

(2.) Two hours after injection 125 c. c. of fluid similar to the last were drawn off. Total acidity = 0·131 per cent. HCl, and was almost wholly due to inorganic acids; no lactic acid was present. Sugar inverted in stomach amounted to 0·9 per cent. After inversion outside, 4·3 per cent. of invert sugar was present.

(*d.*) *Same Patient.*—250 c. c. 20 per cent. cane sugar solution injected into empty stomach.

(1.) One hour after 72 c. c. turbid white fluid were drawn off. Total acidity = 0·09 per cent. HCl, chiefly inorganic. Small amount of organic acids, but no lactic acid present. Sugar inverted in stomach formed 0·56 per cent. After inversion by heating, the invert sugar had increased to 3·57 per cent.

(2.) Two hours after injection 83 c. c. of fluid similar in character to the preceding were drawn off. Total acidity as HCl = 0·134 per cent. Inorganic and organic acids were present in nearly equal amounts. No lactic acid. Sugar inverted in stomach amounted to 0·56 per cent., while after inversion outside, invert sugar formed 3·44 per cent.

(*e.*) *Same Patient.*—He says that he has felt very ill for the last three days, or since this treatment was commenced (*i.e.*, washing out stomach and injection of cane sugar solution). He had had only milk and bread for breakfast, yet on washing out the stomach there was much evolution of sulphuretted hydrogen. 250 c. c. of 20 per cent. cane sugar solution were injected.

(1.) One hour later 75 c. c. of turbid white fluid were drawn off. Total acidity, estimated as HCl, formed 0·109 per cent. A large amount of mineral acid was present; organic acid in small amount. No lactic acid reaction. The amount of sugar inverted in stomach was 0·392 per cent. After inversion outside, invert sugar formed 5·26 per cent.

(2.) Two hours after injection, 100 c. c. of thick fluid were drawn off. Total acidity now equal to 0·094 per cent., due chiefly to inorganic acids; no lactic acid present. Sugar inverted in stomach formed 0·9 per cent.; after inversion outside, invert sugar increased to 5 per cent.

He suffered much pain till he induced emesis.

(*f.*) *Same Patient.*—Injected 250 c. c. cane sugar solution.

(1.) One hour later 100 c. c. thick white fluid drawn off. Total acidity = 0·105 per cent., principally mineral; no lactic acid. Sugar inverted in stomach, 1 per cent.; after inversion outside, invert sugar 5·5 per cent.

(2.) Two hours afterwards 75 c. c. of fluid similar in character were drawn off. Total acidity, 0·116 per cent. as HCl; trace of organic but no lactic acid. Sugar inverted in stomach 0·6 per cent. After inversion on water-bath, invert sugar 2·3 per cent.

Digestion of Cane Sugar in Chronic Gastric Catarrh.

Series.	Time during which Cane Sugar was in the Stomach.	Number of Cubic Centimetres syphoned off.	Total Acidity as per cent. HCl.	Presence of Inorganic Acids.	Presence of Organic Acids.	Invert Sugar. Per cent. formed in Stomach.	Invert Sugar. Per cent. formed outside Body.	Remarks.
	Hours.							
I.	1	70	0·2	+	+	·98	2·	Had much pain; acid vomit; heartburn; flatulence.
II.	1	83	0·183	++	+	1·47	5·9	Pain; heartburn; flatulence severe, not relieved till emesis produced.
	2	130	0·175	+++	+	1·7	4·3	
III.	1	65	·07	++	+	1·04	6·6	Pain severe.
	2	125	0·131	+++	+	0·9	4·3	
IV.	1	72	0·09	++	+	0·56	3·57	Pain severe.
	2	83	0·134	++	++	0·56	3·44	
V.	1	75	0·109	++	+	0·392	5·26	Much pain till he vomited.
	2	100	0·094	+++	+	0·9	5·	
VI.	1	100	0·105	++	+	1·	5·5	...
	2	75	0·116	++	+	0·6	2·3	

If we compare this table with that of the healthy digestion of cane sugar, we see that the acidity is very much alike in both. There has been a tolerably large amount of inversion in the case of this dyspeptic, but the sugar has been retained in the stomach along with a large amount of fluid, and has not been absorbed or passed on as in the healthy individual. This case demonstrates well the tardy nature of the digestive and absorptive processes in catarrhal conditions of the gastric mucous membrane.

The patient made constant complaint of pain, heartburn, and flatulence after the injection of the cane sugar solution; while the healthy man only once mentioned that he had very slight pyrosis.

Digestion of Invert Sugar in Chronic Gastric Catarrh.

The next set of experiments deals with the gastric digestion of *invert sugar* in the same patient suffering from chronic gastric catarrh.

(*g.*) 250 c. c. 20 per cent. solution of invert sugar injected into stomach.

(1.) One hour later 80 c. c. of thick viscid fluid resembling saliva were syphoned off. Total acidity equal to 0·153 per cent. as HCl. Inorganic acids form the largest part of the acidity, though organic acids also are present. Invert sugar 5·26 per cent.

(2.) Two hours after injection 120 c. c. fluid, not so viscid as before, were drawn off. Total acidity 0·094 per cent., principally inorganic; no lactic acid. Invert sugar 1·54 per cent.

He made no compaint of pain, nor had heartburn or flatulence after receiving this injection, till about 4 P.M., or six hours after the invert sugar solution had been introduced, and obviously not at all due to the saccharine fluid.

(*h.*) *Same Patient.*—250 c. c. 20 per cent. solution of invert sugar injected.

(1.) One hour afterwards 65 c. c. thick whitish fluid were drawn off. The total acidity amounted to 0·091 per cent. as HCl; small amount of organic acid present (no lactic acid), but much inorganic. Invert sugar 5 per cent.

(2.) Two hours after injection 62 c. c. fluid drawn off. Total acidity equal to 0·138 per cent. HCl; characters similar. Invert sugar 2·6 per cent.

Patient had no discomfort of any kind.

(*i.*) *Same Patient.*—250 c. c. invert sugar introduced.

(1.) One hour later 52 c. c. turbid thick fluid obtained. Total acidity 0·122 per cent. HCl, due chiefly to inorganic acid. Invert sugar 5·5 per cent.

(2.) Two hours after injection 42 c. c. of fluid similar in character to the preceding were drawn off. Total acidity, estimated as HCl, 0·113 per cent., chiefly inorganic; no lactic acid. Invert sugar 1·2 per cent.

Patient felt very comfortable.

(*j.*) *Same Patient.*—250 c. c. invert sugar injected.

(1.) One hour later I drew off 68 c. c. turbid white fluid. Total acidity equal to 0·116 per cent.; small amount of organic acid present, but chiefly inorganic; no lactic acid. Invert sugar 4·76 per cent.

(2.) Two hours afterwards 100 c. c. of similar fluid drawn off. Total acidity equal to 0·102 per cent. HCl, chiefly inorganic; no lactic acid. Invert sugar 3·7 per cent.

(*k.*) *Same Patient.*—250 c. c. 20 per cent. invert sugar injected.

(1.) One hour afterwards 75 c. c. of turbid fluid were drawn off. Total acidity 0·109 per cent., due chiefly to inorganic acids; no lactic acid. Invert sugar 4·35 per cent.

(2.) Two hours after injection I drew off with difficulty 30 c. c., the stomach being almost empty. Total acidity equal to 0·07 per cent as HCl, chiefly inorganic. Invert sugar 0·8 per cent.

On neither of the two latter occasions did the patient make any complaint, but said that he had felt better during the last few days, or during the time he had been getting invert sugar. It is interesting to compare this with the statement made by him after the cane sugar injections.

These results may be tabulated as follows:—

Digestion of Invert Sugar in Chronic Gastric Catarrh.

Series.	Time during which Invert Sugar was left in Stomach.	Number of Cubic Centimetres drawn off.	Total acidity as HCl per cent.	Presence of Inorganic Acids.	Presence of Organic Acids.	Invert Sugar per cent.	Remarks.
	Hours.						
I.	1	80	0·158	+++	+	5 26	No discomfort.
	2	120	0·094	+++	+	1·54	
II.	1	65	·091	+++	+	5·5	...
	2	62	0·138	+++	+	2·6	
III.	1	52	0·122	+++	+	5·5	...
	2	42	0·118	+++	+	1·2	
IV.	1	68	0·116	+++	+	4 76	...
	2	100	0·102	+++	+	3·7	
V.	1	75	0·109	+++	+	4·35	...
	2	30	0·07	+++	+	0·8	

This table shows how great a reduction has taken place in the percentage of invert sugar during the second hour as contrasted with the first. If we compare this with the digestion of the same sugar in health (see *Edinburgh Medical Journal* for September, page 208), we are struck by the fact that in the healthy stomach there is very little invert sugar left after two hours, while in the dyspeptic, though the amount has been greatly reduced, there is still a large proportional amount. The absorption or emptying of the stomach is much less rapid in this catarrhal condition than in health, but the difference in behaviour of the sugars experimented with—cane and invert sugar—is strikingly evident on looking over the two tables showing the digestion of cane and invert sugar in the case of this patient with catarrhal dyspepsia. In the first table we see how large an amount of unchanged sugar was still in the stomach even at the end of two hours, while in the case of invert sugar the amount still retained at the end of this period was proportionally very small. The great and important clinical point to note, however, is that with invert sugar there was no pain or discomfort, while with cane sugar on nearly every occasion the patient suffered much from heartburn, flatulence, or even actual pain over the stomach. It is evident that in this case invert sugar was much more easily borne than cane sugar.

II. Digestion of Cane Sugar in Pernicious Anæmia.

The next patient in whom I carried on a similar set of experiments was a labourer, aged 45, suffering from pernicious anæmia. Six months previously his symptoms began by him experiencing a heavy, dull weight over the stomach after taking food. This increased in severity, till at the time when I had him under observation, this pain was very intense; he suffered severe headache soon after taking food, with waterbrash and even vomiting.

What was the nature of the gastric juice in such a case, and how would it behave towards sugar?

Nature of the Gastric Secretion.—To investigate the first of these questions, I gave him 250 c. c. of cooked minced steak to eat, after having first washed out his stomach thoroughly.

(1.) One hour afterwards I drew off 76 c. c. of muddy light yellow fluid containing very small fragments of muscular tissue, which formed an almost amorphous deposit. Fat was floating on the surface in tolerably large round masses. The total acidity equalled 0·016 per cent. hydrochloric acid; no lactic acid was present. The acidity was so feeble that we might almost have said it was neutral in reaction. No peptone reaction. Fibrin was soon digested after adding dilute hydrochloric acid.

(2.) Two hours after eating the mince-meat 30 c. c. of pale yellow fluid were drawn off. It also contained a fine powder of muscular fibre. On the surface the fat floated in one large mass. Total acidity was equal to 0·006 per cent.; faint trace of lactic acid present. Polariscope —1·1 per cent. No peptone reaction. Fibrin was soon digested after acidification with hydrochloric acid.

This gastric secretion has, therefore, hardly any acidity. There is no lack of pepsin, as is shown by the ready digestion of fibrin after the fluid has been acidified.

Gastric Digestion of Cane Sugar in Pernicious Anæmia.

(*a*.) 250 c. c. of a 20 per cent. solution of cane sugar were injected into the empty stomach.

(1.) One hour later I drew off 25 c. c. yellow coloured fluid. The total acidity as hydrochloric acid amounted to 0·0018 per cent.; no lactic acid present.

None of the cane sugar had undergone any inversion in the stomach, as evidenced by the inability of the secretion to reduce Fehling's solution. After inversion outside of the body the fluid contained 0·43 per cent. invert sugar.

(2.) Two hours after injection 38 c. c. of fluid, paler in colour than the previous, were drawn off. The total acidity was practically *nil*—being 0·0007 per cent. as hydrochloric acid. Invert sugar was absent from the fluid when withdrawn, and also after having been acidified and heated for two hours. In fact, after the lapse of two hours the stomach contained absolutely no sugar of any kind.

This patient had been accustomed to have his stomach washed out, and he told me that hitherto after such treatment he felt "light" and comfortable, but this time (after having the solution of cane sugar injected) he had felt very heavy and had a "gone feeling" over the region of the stomach, similar to what he experienced after taking a good meat diet.

(*b*.) *Same Patient.*—250 c. c. of a 20 per cent. solution of cane sugar injected.

(1.) One hour after I drew off 50 c. c. of yellow fluid with many mucous flocculi in it. The total acidity amounted to 0·021 per cent. HCl. Sugar inverted in stomach, none; after inversion on water-bath, invert sugar amounted to 4·17 per cent.

The patient stated that he felt "very bad indeed," and headache was severe.

(2.) Two hours after injection there was no fluid in the stomach, and when it was rinsed out with pure water the rinsings contained no sugar of any kind.

Gastric Digestion of Cane Sugar in Pernicious Anæmia.

Series.	Time during which Cane Sugar was in Stomach.	Number of Cubic Centimetres syphoned off.	Total Acidity as per cent. HCl.	Per cent. Invert Sugar formed in Stomach.	Per cent. Invert Sugar formed outside.	Remarks.
	Hours.					
I.	1	25	0·0018	0	0·43	Much pain and discomfort.
II.	2	38	0·0007	0	0	
III.	1	50	0·021	0	4·17	Felt very ill.
IV.	2	0	0	0	0	

Practically the gastric juice of this patient had no acidity. This accounts for there being no inversion of the cane sugar during its stay in the stomach. The probability is that after staying in the stomach unchanged for some time the cane sugar was simply passed on through the pyloric orifice into the duodenum.

Behaviour of Invert Sugar in the Stomach in case of Pernicious Anæmia.

(*c.*) *Same Patient.*—250 c. c. of 20 per cent. invert sugar solution introduced into stomach. Fifteen minutes afterwards 150 c. c. syphoned off. Total acidity equalled 0·0036 per cent. HCl; invert sugar 18·2 per cent.

(*d.*) *Same Patient.*—250 c. c. invert sugar solution given.

(1.) One hour later 52 c. c. greenish yellow fluid drawn off. Total acidity amounted to 0·0145 per cent. HCl. No lactic acid present. Invert sugar was present to 8·7 per cent.

Patient stated that he felt no discomfort that day, and that he experienced the same "light" feeling which he formerly had after having his stomach washed out. He had no flatulence or water-brash.

(2.) Second hour after injection 54 c. c. pale fluid drawn off. Acidity *nil*—it being neutral in reaction. No invert sugar was present.

(*e.*) *Same Patient.*—250 c. c. invert sugar introduced.

(1.) One hour later 23 c. c. drawn off. Total acidity equalled 0·01 per cent. as HCl. Invert sugar 3·7 per cent.

(2.) Two hours after injection there was no fluid in the stomach, and when rinsed out, no sugar was detected in the rinsings.

Behaviour of Invert Sugar in Pernicious Anæmia.

Series.	Time during which the Invert Sugar was left in Stomach.	Number of Cubic Centimetres drawn off.	Total Acidity as per cent. HCl.	Per cent. Invert Sugar.	Remarks.
	Hours.				
I.	1	52	0·0145	8·7	No discomfort.
II.	2	54	0	0	...
III.	1	23	0·01	3·7	...
IV.	2	0	0	0	...

In this patient the conduct of the stomach to both cane and invert sugar has been similar. It has simply emptied itself very quickly. There may have been some absorption of invert sugar through the gastric walls, but more probably the greater part has simply been passed through the pyloric orifice into the duodenum.

III. DIGESTION OF CANE SUGAR IN ALCOHOLIC DYSPEPSIA.

This patient was a seafaring man, aged 54. His complaints were morning vomiting, weight, fulness and uneasiness over stomach; very troublesome flatulence, and want of appetite.

(*a*.) 250 c. c. cane sugar solution (20 per cent.) were injected into his empty stomach.

(1.) One hour later 45 c. c. of turbid ropy fluid, containing much mucus, were drawn off. Much flatus escaped also through the tube. Total acidity amounted to 0·0145 per cent. as HCl. Traces of lactic acid were present. The amount of sugar inverted in stomach was 0·208 per cent. After inversion on water-bath the invert sugar had increased to 5 per cent.

He stated that flatulence became very severe after the injection of the cane sugar.

(2.) Two hours after injection 30 c. c. of thick viscid fluid were drawn off. The total acidity was equal to 0·0036 per cent. HCl. Sugar inverted in stomach amounted to 0·089 per cent. After inversion outside, invert sugar formed 0·213 per cent.

(*b*.) *Same Patient.*—250 c. c. cane sugar solution injected. One hour later 50 c. c. thick viscid blood-stained fluid syphoned off. The total acidity was here 0·01 per cent. as HCl; no lactic acid was present. Fehling's test showed that the cane sugar had undergone no inversion in the stomach. After inversion on water-bath the invert sugar formed 1·56 per cent.

Gastric Digestion of Cane Sugar in Alcoholic Gastric Catarrh.

Series.	Time during which Cane Sugar was in the Stomach.	Number of Cubic Centimetres syphoned off.	Total Acidity as per cent. HCl.	Per cent. Invert Sugar formed in Stomach.	Per cent. Invert Sugar formed outside.	Remarks.
	Hours.					
I.	1	45	0·0145	·208	5·	Flatulence severe.
II.	2	30	0·0036	·089	·213	...
III.	1	50	0·01	0	1·56	...

In this case the acidity is very slight, and the amount of inversion in the stomach proportionally small. This experience is quite opposed to the usual statement that in diseased conditions of the mucous membrane of the stomach, with the secretion of much mucus there is a great inversion of cane sugar, due to a special ferment which is said to exist in the mucus, and which is allied to ptyalin.

The preceding experiments show that in certain diseases invert sugar is very quickly passed on into the duodenum, and that the absorption of this sugar through the walls of the stomach seems to be very slight. That this is so is shown by the table of the events in the digestion of cane sugar in cases of chronic gastric catarrh. From it we see that the relation which the amount of invert sugar bears to cane sugar remains very much the same at the end of the first or second hour. Had there been much absorption through the gastric walls this relation would have been changed.

In all cases we find that invert sugar has been much more easily borne than cane sugar, and this appears to me a most important point clinically. In almost every case those patients made complaint of weight, pain, heartburn, flatulence, etc., after the solution of cane sugar had been introduced into the stomach, while there was an almost entire absence of disagreeable sensations after the same amount of invert sugar had been injected.

In the cases of chronic gastric catarrh cane sugar was retained in the stomach for a lengthened period, but did not undergo any marked degree of inversion. When invert sugar was, however, given to these patients it very rapidly disappeared from the stomach, though not so quickly as in the case of normal digestion. In the case of pernicious anæmia, owing to the want of acidity of the gastric juice, cane sugar underwent no inversion while in the stomach, even after an interval of two hours. It caused, likewise, much pain and discomfort. The solution of invert sugar, on the contrary, caused no such symptoms, and disappeared rapidly from the stomach.

I am convinced, from these experiments, that cane sugar lingers in the stomach for a much longer period than invert sugar, and is consequently much more liable to undergo fermentative changes. It is, however, an easy matter to give invert sugar instead of cane sugar to persons in whom digestion proceeds slowly or is deranged.

III.—RHEUMATISM OF THE LARYNX.

By G. Hunter Mackenzie, M.D., Surgeon for Diseases of the Throat and Nose to the Eye, Ear, and Throat Infirmary, Edinburgh.

It is only within a comparatively recent period that attention has been directed to the manifestations of rheumatism in and about the larynx. Probably the most conclusive proof of the accuracy of this assertion is that no mention of this condition is made by Morell Mackenzie in his great work on *Diseases of the Throat and Nose*, published in 1880 and 1884.

Rheumatism may be internal or external to the larynx, or both, with corresponding modifications of symptoms. Fletcher Ingals,[1] who has paid great attention to the subject, defines rheumatic laryngitis as a "painful affection of the vocal organ, attended by hoarseness and fatigue after talking, sometimes by grave obstruction of the glottis." Of the more common forms (of which no mention is made in literature), he says:[1] "For some years I have observed chronic painful affections of the larynx attended by no erosions or ulcerations, and by little congestion or swelling. They usually occur in persons of rheumatic diathesis; but often the larynx, or tissues about the hyoid bone, present the only evidence of the constitutional disease."

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[1] *Journal of Laryngology and Rhinology*, vol. ii. p. 132.

The symptoms dependent upon rheumatic disease within the larynx may thus be of a somewhat grave nature. Goris[2] records a case of muscular rheumatism with swelling of the vocal cords and such intense "spasm of the glottis" as to necessitate tracheotomy. Vocal defects are, however, those most commonly met with, and are usually dependent upon immobility of a vocal cord, owing to affection of the muscles concerned in its movement. In such a case the laryngoscopic appearances may be entirely negative. If, however, the disease is arthritic, and the crico-arytenoid articulation is affected, there may be more or less swelling and tumefaction of the mucous membrane over the arytenoid cartilages. It is of importance to note that laryngeal hæmorrhage may be of rheumatic origin.

Outside the larynx, rheumatism most frequently occurs as a muscular affection, and manifests itself by pain on pressure and on movement of the affected muscles. This variety may be coincident with the internal affection, and is more apt to be accompanied by rheumatic manifestations elsewhere, especially in the muscles of the neck and shoulders. The following case may be taken as illustrative of internal and external laryngeal rheumatism:

A gentleman, aged 30, was first seen on 29th January 1893. About six weeks previously he had been suddenly affected with huskiness, the onset of which was coincident with the development of rheumatic pains about the neck and shoulders. Slight discomfort was present during deglutition, and tenderness on pressure was manifested in the region of the hyoid bone and thyroid cartilage. On laryngoscopic examination there was found phonatory and respiratory immobility of the left vocal cord, which lay in the cadaveric position; there was puffiness over and about the left arytenoid cartilage. The voice was husky, and was easily fatigued. The patient was treated by stimulating inhalations and anti-rheumatic remedies. On 6th January 1894 (about one year after having first been seen), the vocal cord still remained immobile, but the puffiness over the arytenoid cartilage had disappeared. The vocal symptoms had partially disappeared.

Immobility of a vocal cord with consequent huskiness, as in the above case, seems to be one of the most common manifestations of rheumatism of the larynx. Thus, in one of the five cases recorded by Ingals[3] there was paresis of the right vocal cord without swelling or redness, and in another there was bilateral paralysis of the lateral crico-arytenoid muscles (adductors) without congestion or swelling.

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[1] *Journal of Laryngology and Rhinology*, vol. ii. p. 132.

[2] *Revue internationale de Rhinologie, etc.*, June 1892.

[3] *Op. cit.*

Simpson of New York[1] has directed attention to what he designates "Acute Rheumatic Laryngitis of Gonorrhœal Origin." In one case he describes the right vocal cord as swollen and immobile.

There is thus sufficient evidence to show that the internal and external muscles of the larynx are subject to rheumatism; that the symptoms, though slight, and rarely grave, may be the source of much uneasiness to the patient; and that the resulting vocal defects may be of long continuance and sometimes permanent. Further, this local affection may exist without additional evidence of the constitutional presence of the disease, more especially when the internal muscles of the larynx are alone affected.

The treatment of such cases ought to be general rather than local. Small benefit follows the application of pigments and similar preparations to the affected parts, whereas a course of constitutional anti-rheumatic treatment will almost invariably remove the most of the disagreeable symptoms of which the patient complained. If, however, the crico-arytenoid articulation be affected, it is doubtful if the corresponding vocal cord will ever regain its normal range of movement, and hence the voice may be more or less permanently affected.

IV.—PATHOLOGY OF THE NERVOUS SYSTEM IN RELATION TO MENTAL DISEASES.

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INTRODUCTION.

The present paper, and those which it is our intention should follow it, are the outcome of a demonstration originally given by Dr Clouston and ourselves before the Edinburgh Medico-Chirurgical Society last March, and subsequently before the Medico-Psychological Association at its annual meeting in Dublin. The amount of interest that these demonstrations seemed to arouse in the minds of those who witnessed them has induced us to place upon record in a more permanent and detailed form the results of our past years of study of the pathology of mental diseases. In coming to this decision we have also been influenced by the consideration that the subject of insanity will in future come more prominently before the profession than it has hitherto done, owing to its having recently been made a compulsory subject in the medical curriculum. On this account it has seemed to us that a fuller and more systematic description of the morbid changes found in the nervous system in so-called mental diseases than is at present given in the ordinary text-books, embodying as far as possible the most recent researches of others as well as our own, would prove interesting and useful to many. Considering the vast amount of work that has already been done on the subject, we feel that it would be quite impossible to give an exhaustive account of it within the limits of such a series of articles as we propose to publish. We hope, however, to make our review of it fairly complete, supplementing any omission of details by references to original articles.

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[1] *Journal of Laryngology and Rhinology*, vol. iii. p. 442.

It is proposed to divide the subject-matter into two sections, in the first of which will be given an account of the various morbid conditions affecting the different individual constituents composing the nervous system or closely related to it, and in the second a description of the pathology of some of the recognised clinical types of insanity. Little is as yet known regarding the true nature of the morbid processes at work in the latter, and we cannot, of course, do more than bring together the facts already acquired, which, however, almost exclusively concern their morbid anatomy.

It is not our purpose to describe any of the methods by which the various pathological conditions have been investigated, as there are already several excellent books dealing with this matter.[1] The only exception made is in the case of a method originally introduced by one of us,[2] and since then modified and improved in such a way, that it now promises to combine the advantages of Bevan Lewis's well-known fresh method with those of the various fixing and hardening processes. It has the further merit of being applicable to other tissues than the brain, and has already yielded valuable results, as we hope to show.

MORBID CONDITIONS OF THE SCALP. HÆMATOMA AURIS.

There are two morbid conditions affecting the scalp, which, though they cannot, strictly speaking, be classified under diseases of the nervous system, are yet so closely and specially connected with mental disease as to demand consideration in any systematic account of its pathology. One of these is the rare condition of hypertrophy of the scalp, and the other its morbid adhesion to the pericranium. For a like reason the subject of hæmatoma auris claims to be considered, and may conveniently be taken up in this section.

Hypertrophy of the Scalp.—The abnormality to which this name has been given was first described in 1884 by Poggi (1), who observed it in a patient in the asylum at Como. Four other cases have recently been recorded,—two by T. W. M'Dowall (2), and two by J. J. Cowan (3), all of which occurred in adult male genetous idiots, two of them being also microcephalic. Poggi's patient, on the other hand, was a woman of 66 who suffered from melancholia. The appearances described in the several cases are remarkably uniform, so that the general features of the condition may be readily stated. The scalp covering the upper and posterior part of the head is abnormally redundant, thick, lax, and mobile, and its surface presents a number of roughly symmetrical antero-posterior and transvere furrows and ridges. The hair is normal in appearance, or coarser than usual. The antero-posterior furrows, which are commonly about ten in number, occur on the top of the head; while the transverse ones, which do not usually exceed two or three, occur in the occipital region. In length they vary from two or three up to six inches. The intervening ridges are about an inch in breadth. The depth of the furrows varies from ⅛th in. to ⅜ths in. The Italian case was somewhat exceptional in that the posterior surface of the head was most affected, and the antero-posterior and transverse arrangement of the folds and resulting furrows was modified into a crescentic form with the concavity upwards. The results of a microscopic examination of the thickened scalp have not yet been recorded, but Poggi states that the skin of the folds in his case reached a thickness of twelve millimètres, and that of the furrows four millimètres. He believes the condition to be a congenital hypertrophy. Kundrat (2) also regards it as hypertrophic. Kaposi (2) further explains the abnormality by saying "that the brain had not advanced in growth, but the skin was sufficient for a normal skull, and had developed independently in accordance with its own capacity for growth. But because the contents to be surrounded remained too small, the normally large skin was forced to arrange itself in folds over the small skull, and in parts became atypic,—*i.e.*, hypertrophied during development." M'Dowall, however, points out that the condition is very rare even in microcephaly, which would scarcely be the case if Kaposi's view were correct. He regards it rather as an indication of a retrogression to a lower type, of which examples are seen in many members of the carnivora.

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[1] *The Human Brain*, by W. Bevan Lewis, L.R.C.P.; *Microscopical Examination of the Human Brain*, by E. Goodall, M.D., M.R.C.S.

[2] Robertson, "A New Method of Embedding Tissues," *Journ. of Anat. and Phys.*, vol. xxiv., 1890.

LITERATURE.

1. POGGI.—"Ipertrofia del cuoio capelluto in una alienata," *Arch. di psichiatria*, v., f. 2-3, 1884. (Translated in *Journ. of Ment. Science*, April 1893.)
2. T. W. M'DOWALL.—"Case of Abnormal Development of the Scalp," *Journ. of Ment. Science*, January 1893.
3. J. J. COWAN.—"Two Cases of Abnormal Development of the Scalp," *Journ. of Ment. Science*, October 1893.

Morbid Adhesion of the Scalp.—In health the epicranial aponeurosis, while closely united to the skin, is connected with the pericranium only by loose areolar tissue, so that, after the usual incision over the vertex has been made, the scalp can be easily separated from the subjacent structures by the hand. In some diseased conditions this areolar tissue becomes markedly indurated, giving rise to morbid adhesion of the scalp. In hospital cases this change is rare, though it is difficult to obtain exact statistics. In patients dying in asylums, on the other hand, it is exceedingly common. Statistics which we have compiled from our own cases in the pathological records of the Royal Edinburgh Asylum show that some degree of morbid adhesion occurred in 56 per cent. of all cases. A very marked degree of adhesion, such as to render detachment of the scalp impossible except by dissection, was found to occur in 13 per cent. This degree of induration was associated with morbidly firm, though sometimes only patchy, adhesion of the pericranium to the bone. Taking the different forms of insanity, adhesion of the scalp was found to occur most frequently in general paralysis, in 77 per cent. of which cases it was present. Epilepsy came next with 57 per cent. It occurred in only 27 per cent. of cases of senile insanity. It was accompanied by thickening or condensation of the bones of the skull in 71 per cent. of cases, and frequently, though less commonly, by morbid adhesion of the dura to the skull. These facts support the view which we are inclined to adopt regarding the causation of the condition. The morbid energising of the brain which constitutes insanity is constantly accompanied, in some degree at least, by an abnormal nutritional state, which, owing to closely related nervous and vascular supply, specially affects the surrounding tissues, giving rise to a whole series of structural alterations in them, of which induration of the extra-pericranial areolar tissue is only one. Among the others are to be included thickness and coarseness of the hair, thickening and condensation of the cranial bones, morbid adhesion of the dura mater to the skull, and degenerative changes in the cartilages of the ears and in the dura mater, which probably determine the proclivity of the insane to othæmatoma and subdural membrane formation.

Hæmatoma Auris.—This condition, which is also known by the names of Othæmatoma, Auricular Hæmatoma, and Insane Ear, is one of which the pathology is still far from being settled. The most diverse opinions are held by the various authorities as to its etiology, the presence or absence of preliminary tissue changes, and the seat of the hæmorrhage. Chiefly responsible for this state of matters is no doubt the circumstance that opportunities of making microscopical examinations of the ear in the early stage of the disease are extremely rare. Nearly all the recorded investigations deal with a very small number of cases,—often with only one,—and the error has too frequently been fallen into of basing important generalisations on this insufficient foundation. Nevertheless the literature of hæmatoma auris is now very extensive, and a comparison of the results of individual researches permits of reliable conclusions being come to upon most, though not all, of the questions at issue. As we shall point out, there is still one very important direction in which research on the subject is especially required before its pathology can be regarded as settled.

The occurrence of sanguineous tumours of the auricle in asylum patients was first drawn attention to by Frederick Bird in 1833. For a long time they were believed to be peculiar to the insane, but it has been shown by Strahan (9), Field (14), Vallon (4), Tomkins (10), Pilkington (11), and others, that they may also occur in persons in apparently perfect health. The last-named writer has even gone so far as to contend that the condition is not more common in the insane than in the sane. The general opinion is, however, entirely against this view, and it is now almost universally admitted that othæmotoma is a rare occurrence in the mentally sound, while among asylum patients it is found with moderate frequency. In the former it is practically always the result of a severe traumatism, as is evident from a consideration of the class of individuals in whom it is stated to have been observed, viz., boxers, acrobats, wrestlers, porters, and football players. Barr (13), however, believes that it may occur spontaneously in persons of sound mind. A curious fact worthy of note is that othæmatoma has frequently been observed to occur in otherwise healthy cats. Regarding the frequency of its occurrence in the insane, Campbell (8) found that out of 583 asylum patients examined, deformity of one or both ears from this cause occurred in thirteen cases, a percentage of 2·23. Lennox Browne (7) found it in 32 patients out of 1424, or in 2·24 per cent. Langdon Down found it in 3·6 per cent. of male congenital idiots, but he states that it is seldom to be met with in idiocy developed during post-uterine life. It is important to note that the majority of his cases were also epileptics. It is more common in men than in women. Lennox Browne found it in 3·39 per cent. of male patients, and in only 1·11 per cent. of females. The left ear is more commonly affected than the right in the proportion of three to one according to the same authority, who also states that both ears are affected in one-third of all cases, the left being then usually first involved. Othæmatoma has been observed in all the common forms of insanity. It is, however, especially prone to occur in general paralysis, epilepsy, and acute and chronic mania. All patients subject to attacks of excitement appear to be especially liable to it. It occurs practically always on the anterior aspect of the auricle, and is confined to the cartilaginous portions. It commences most frequently about the helix as a tense, ovoid, fluctuating swelling of a livid colour, which may remain limited to a small area, or extend so as to involve the whole of the cartilaginous portion of the ear. The swelling increases gradually until, in the course of a few hours to several days, it may attain the size of a hazel-nut, or even of a hen's egg. Rupture of the cyst occasionally occurs at this stage. In these cases, or when it is opened artificially, the contents are found to consist of fluid blood which has not undergone much change, and which, as a rule, retains its coagulability. After from one to three weeks the tumour begins to shrink. This process continues—though, according to Mabille (5), it may be interrupted by the occurrence of new hæmorrhages—until great deformity results, in severe cases the ear ultimately appearing as a shrivelled and shrunken mass. Perichondritis auriculæ is a condition which requires to be distinguished from true othæmatoma. It does not appear to occur specially in the insane. According to Pietersen (1) only a small quantity of effusion occurs and the swelling persists, but no further deformity results. Field (14), however, states that deformity is produced as in hæmatoma auris.

Regarding the etiology of othæmatoma, the question has been much disputed whether it is always due to mechanical violence or not. The conclusion now arrived at seems to be that, while in the insane it is frequently traumatic, it is yet indisputable that it may occur in them without any traumatic cause whatever. The latter view has recently been strongly advocated by Tischkow (15), whose investigations will be referred to presently. On the other hand, Magnan (4) has reported an epidemic of othæmatoma, which ceased on the dismissal of certain attendants who were found to have been ill-using the patients. Granting, however, that hæmatoma of the ear is, in asylum patients, frequently traumatic, the question still remains to be answered,—Why are the insane specially prone to it? Upon this point opinions are much divided. Virchow, Meyer (3), and more recently Tischkow, have maintained that this proclivity is due to a degenerative change in the cartilage of the ear. Mabille (5), Cobbold (2), and others have maintained that it is owing to special degenerative changes in the vessels of the perichondrium or subcutaneous connective tissue. On the other hand, Mabille and Vallon state that there is no prior change in the cartilage, and Pietersen, Lennox Browne, and others, that there is no degenerative change in the vessels. Pietersen believes that the special frequency of the occurrence of othæmatoma in the insane is owing to the suffusion with blood of the ears in common with the rest of the head, face, and neck, which occurs in these patients during periods of excitement, and that a slight injury to the ear when in this condition is sufficient to cause rupture of some of the vessels. Hill (12) considers that there is "a peripheral trophic lesion," and supports his views by a reference to the experiments of Brown-Séquard, in which hæmorrhage into the auricle was found to be produced in guinea-pigs by irritation of the restiform body of the same side. Pellizzi (16) and Goodall (17) have cultivated organisms from the effused blood of recent cases,—the former a streptococcus, and the latter the staphylococcus pyogenes aureus and albus. Both observers contend that these organisms have an etiological significance. Alex. Robertson (18) believes that the sole cause of the disorder is a disturbance of the cervical sympathetic. It must be admitted that the question is still undetermined.

In considering the morbid anatomy, Mabille's classification is a convenient one, and will here be followed. He divides hæmatomata of the ear into—1, Those in which the blood has not undergone any alteration; 2, those in which the blood is being disintegrated and absorbed; and, 3, those in which the blood has totally disappeared. Dissection of a hæmatoma of the ear in the first of these stages reveals a cyst filled with fluid blood lying in front of the cartilage. Mabille speaks also of an external and an internal limiting wall. There is a difference of opinion as to what these are respectively composed of. For the moment it is sufficient to say that they consist of the tissues normally found in this situation more or less displaced and infiltrated with blood. In the second stage contraction of the involved tissues has set in. The walls of the cyst have become firm and the contents are semi-solid, reddish in the centre and yellowish at the periphery. In the third stage the ear is deformed and shrivelled. On section there is found, in front of the cartilage, a thick layer of dense cicatricial tissue. The cartilage is distorted and partially folded upon itself, but otherwise usually appears normal to the naked eye. Behind it the tissues are healthy or slightly thickened. In the cicatricial area there are frequently nodules of cartilage. Sometimes two distinct layers of cartilage are found separated from each other by fibrous tissue. Coming to the microscopic appearances, those of the first stage are of chief interest. Here, again, there is an extraordinary difference of opinion among observers. The actual seat of the hæmorrhage is still a matter of dispute. Most authorities, including Virchow, state that the blood lies between the cartilage and the perichondrium, from the minute vessels of which they say the hæmorrhage takes place. Mabille insists that the hæmorrhage occurs from the vessels of the subcutaneous cellular tissue. Vallon holds that there are two layers in the perichondrium, and that the blood lies between them. Tischkow maintains that the hæmorrhage takes place in the substance of the cartilage, while Tétard (6) states that it may occur in any one of these situations. The last statement may be, and probably is, an actual fact; but, as the result of investigations made by ourselves, we are inclined to support the views of Tischkow, and to believe that in the great majority of cases, and especially in those which are idiopathic, the hæmorrhage occurs from new vessels which develope within the cartilage subsequent to a peculiar degenerative change which occurs in it. There is also much diversity of opinion as to the condition of the bloodvessels. No conclusive observations seem to have been yet recorded as to this point. The condition of the cartilage, again, is a matter upon which different authorities are not agreed. Mabille, Vallon, and others have stated that they find no change in the cartilage. On the other hand, Virchow and Meyer long ago maintained that there is a primary lesion of this structure which is the cause of the development of othæmatoma. This view has recently been revived by Tischkow in an important paper. He describes a peculiar change which, he says, is present, especially in general paralysis, and to which he attributes the occurrence of the hæmorrhage. The change, he states, consists in a loss of the elastic fibres, fatty degeneration of the cartilage cells, and an invasion of the degenerated cartilage by new bloodvessels, which easily rupture. He found the same condition in general paralytics who had no othæmatoma. Since Tischkow's paper came under our notice we have made a microscopic examination of the ear in a series of consecutive cases with a view to ascertaining the frequency of the occurrence of this change. The result, as far as we have been able to go, has been to confirm Tischkow's statements, though we have not found that the change is so limited to general paralysis as he indicates. In four cases of general paralysis examined the degeneration described by him was present. In one of them it had advanced only as far as the loss of the yellow elastic fibres and the cartilage cells. In a case of senile insanity, one of epilepsy, and two of dementia, the same degenerative change was present, but only in its early stage and to a very limited extent. In a third case of dementia the cartilage was healthy. In an old case of hæmatoma auris in a patient who suffered from mania, and died from cerebral hæmorrhage, this morbid condition was also present. In all these cases the degenerative change appeared to be of the same character. It consists first in a disappearance of the elastic fibres. Then the cartilage cells undergo degeneration and disappear, leaving a homogeneous hyaline substance. At a still more advanced stage this becomes replaced by highly vascular fibrous tissue. Irregular patches of this degenerative change in an early stage occurred throughout the cartilage in all the cases of general paralysis we have examined. In only two of them, however, had it advanced to the vascular stage over a large area. In some of our cases the larger vessels of the ear showed marked thickening of their intima, while in others they were healthy. This change in the vessels did not seem to bear any relation to the degeneration of the cartilage, as it was absent in some of the cases in which degeneration was present, while it was most marked in the case in which the cartilage was healthy. These facts, it must be evident, have an important bearing upon the etiology of hæmatoma auris. Yet it would be unsafe to draw any important deductions from them until a more extended research had been made, not only into the occurrence of this degenerative change in the ear-cartilages of the insane, but also into its presence or absence in the ears of hospital patients. If the change is found to be so common in the insane as the few cases we have examined appear to indicate, and infrequent in the sane, then there will be little difficulty in understanding the proclivity of the former to hæmatoma auris. In the second stage the wall of the cyst is formed of dense fibrous tissue. In the centre there is pigmentary and granular débris, consisting chiefly of disintegrating red blood-corpuscles, surrounded by granulation tissue. In the third stage there is seen in front of the distorted cartilage a thick layer of dense cicatricial tissue blending with the perichondrium. Some nodules of cartilage are generally found embedded in it. These and the cartilage proper of the ear may show patches of calcareous infiltration, in addition to areas of the degenerative change already described. Cobbold has stated that in some cases even bone with well-developed Haversian systems may be found in the cicatricial tissue. Posteriorly the connective tissues are, as a rule, healthy. In the case of old-standing hæmatoma mentioned above there was a very marked condition of endarteritis obliterans both in the vessels of the cicatricial tissue and in those of the apparently healthy tissues behind the cartilage.

To sum up our own views as to the pathology of this interesting lesion, we believe that there is strong evidence in favour of the contention that the proclivity of the insane to othæmatoma is due to a peculiar degeneration in the cartilage of the ear. This change, as already stated, we regard as being due to the same abnormal nutritional state which induces the lesions of the scalp, skull, and dura mater to which the insane are specially prone. If this view is correct, then the seat of the hæmorrhage must be in the cartilage, though it will be apparently within the perichondrium, with which the new fibrous tissue which replaces the degenerated cartilage always blends. As the perichondrium normally merges into the cartilage by an insensible gradation, one cannot accurately speak of the blood as lying beneath the perichondrium. It must be either outside it, in it, or in the cartilage. Tischkow believes that when this degenerative change is fully established, rupture of the new vessels may occur quite spontaneously. It will be evident that if even a slight traumatic element is added the risk of hæmorrhage will be greatly increased. This view of the etiology of othæmatoma cannot, however, be fully accepted unless supported by the results of further researches in the direction we have indicated. Regarding the question of a bacterial origin which has been raised by the papers of Pellizzi and Goodall, it seems to us that, considering the general features of the disease, it is very improbable that it is of a specific infective nature. The results obtained by these observers scarcely serve to weaken this belief. The mere fact of the occurrence of organisms in the effusion of blood is no proof that they have an etiological relationship to it. Moreover, it is known that blood extravasations into the tissue near the skin can frequently be made to yield bacterial cultures. The vital processes subsequent to the outpouring of the blood are merely those which occur after hæmorrhage into other similar situations, and do not therefore require to be here discussed. The formation of the cartilaginous nodules in the cicatricial tissue is easily understood if it is admitted that the whole or part of the perichondrium lies external to the blood effusion. The almost invariable occurrence of the tumour on the anterior aspect of the cartilage has never, we believe, received any very satisfactory explanation. We have observed that patches of degeneration occur most frequently towards the anterior edge of the cartilage, but they are by no means confined to this situation.

LITERATURE.

1. J. F. G. Pietersen.—In *Dict. of Psychol. Med.*, 1892, vol. i. p. 557. (An exhaustive list of previous literature is appended to this article.)
2. Chas. S. W. Cobbold.—*Quain's Dict. of Medicine*, 1894, vol. i. p. 766.
3. L. Meyer.—"Die pathologischen Gewebsveränderungen des Ohrknorpels und deren Beziehungen zur Ohrblutgeschwulst," *Arch. f. path. Anat.*, 1865, p. 457.
4. Ch. Vallon.—"Note sur l'étiologie et le siège anatomique de l'othématome," *L'Encéphale*, 1881, p. 224.
5. Mabille.—"Note sur l'évolution anatomo-pathologique de l'hématome de l'oreille," *Ann. Med. Psych.*, 1888, p. 273.
6. Leon Tétard.—"De l'hématome du pavillon de l'oreille." Thèse de Paris, 1884. (See *L'Encéphale*, 1884, p. 725.)
7. Lennox Browne.—"Othæmatoma," *West Riding Asylum Reports*, 1875, p. 149.
8. J. A. Campbell.—"Note on Hæmatoma Auris," *B. M. J.*, 1889, i. p. 55.
9. S. A. K. Strahan.—"Hæmatoma Auris," *B. M. J.*, 1889, i. p. 409.
10. H. H. Tomkins.—"Hæmatoma Auris," *B. M. J.*, 1889, i. p. 187.
11. F. W. Pilkington.—"Hæmatoma Auris," *B. M. J.*, 1889, i. p. 187.
12. Wm. Hill.—"Hæmatoma Auris," *B. M. J.*, 1889, i. p. 587.
13. Thos. Barr.—*Manual of Diseases of the Ear*, 1884, p. 158.
14. M. D. Field.—*Journ. of Nerv. and Ment. Dis.*, 1892, p. 892.
15. W. Tischkow.—"Ueber das Othæmatom," St Petersburg, 1891. (See *Neurolog. Centralbl.*, January 1, 1894.)
16. Pellizzi.—"Sull' origine infettiva dell' oto-ematoma dei pazzi." *Riv. Sper. de Freniatria*, 1892, p. 384.
17. Ed. Goodall.—"Observations upon the Pathology of Othæmatoma," *Journ. of Ment. Sci.*, October 1894.
18. Alex. Robertson.—*Glasg. Med. Journ.*, July 1875.

V.—NOTES ON AN OUTBREAK OF CHOLERA IN SARAN JAIL.

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(Concluded from page 438.)

Out of the total number of thirty cases, fifteen recovered and fifteen died, giving a mortality of exactly 50 per cent. According to sex, thirteen males recovered and fifteen died, two females recovered and none died; twenty-seven were convicts, with fourteen recoveries and thirteen deaths; three were under-trial prisoners, of whom one recovered and two died; all these three were concerned in the same offence; the one who recovered was an old man of over 60, the two fatal cases strong men of 25 and 35. Several of the cases which recovered, after the reappearance of bile in the stools, but before they had passed healthy formed stools, went through a period of prolonged constipation. In two cases three days, in three cases four days, in two cases five days, in one case six days, and in one case as long as ten days, thus elapsed without the passage of any stool. It might have been better in these cases, after a couple of days, to have given a mild laxative, such as castor-oil. As they were otherwise doing well, however, I left them alone, and in each case the patient did in the end pass a healthy formed stool, in most cases very large; though certainly, until they had done so, they were a source of some anxiety.

Round worms, varying in number from one up to thirty, were found in the intestines of all the cases subjected to post-mortem examination. It was a curious coincidence that, in each of the first two cases, a round worm was found entangled in the ileo-cæcal valve. I also noted that seven out of the fifteen cases which recovered passed one or more round worms while under treatment, but worms were only passed by one of the nine fatal cases whose bodies were not examined after death. These worms are of such common occurrence, more especially among the lower classes, such as Doms, who are often filthy feeders, that it is almost a matter of routine to give santonine to patients who come under treatment for bowel complaint.

Cramps were marked in eight cases only, of which three recovered and five died. Suppression of urine occurred in all cases. In the fifteen cases which recovered the maximum period of suppression was 68 hours in two cases; the minimum, 18 hours in two cases; and the average 39½ hours; 18–24 hours, four; 24–36, two; 36–48, five; 48–60, two; 68, two. Secondary fever did not occur in any case, and in only one of the fatal cases were there any signs of improvement before death.

In all cases except one the patient was either dead or distinctly better within 72 hours at latest. In the one exceptional case the patient lingered on for 112 hours without showing any signs of improvement, and finally died at the end of that period. The duration of the fatal cases was as follows:—12 hours and under, three; 12–24 hours, three; 24–36, two; 36–48, two; 48–60, two; 60–72, two; 112, one.

The shortest time in which I have seen cholera prove fatal is about eight hours. I have never seen, nor personally heard of, sudden death in this disease, such as is described by some writers.

In cholera there is usually a rapid loss of body-weight, followed on recovery by an almost equally rapid gain. In twelve cases which were weighed on recovery the average loss of weight was 13 lbs., the minimum being 2 lbs. and the maximum 26 lbs. In this case one-fourth of the whole body-weight was lost, the patient being reduced from 106 to 80 lbs. For the date of recovery I took the date when the patient was discharged from hospital and sent to the convalescent gang, a body of prisoners who do the lightest of light work, in fact, practically no work at all. Ten of these twelve prisoners, who were still in jail on 28th July, from ten to four days after discharge from hospital in the various cases, had by that time regained on an average 9 lbs. each, the maximum increase being 17 lbs. in the case which had lost 26 lbs., and the minimum 2 lbs. in the case which had lost 2 lbs. The amount of weight lost in the various cases was as follows:—18 lbs. and over, three; 12 to 18 lbs., two; 6 to 12 lbs., six; 2 lbs., one.

A cholera incinerator had lately been provided for the use of the jail, and at first worked satisfactorily, burning the excreta. But, as the cholera cases increased in number, it was found unequal to the task of disposing of the large quantity which required to be consumed. The evacuations had therefore to be disposed of by burial, as formerly, and were deeply buried at the further end of the outer garden. The dead were buried by the municipal authorities at the cost of the jail.

The treatment of cholera has been the subject of as much discussion as its causation. Innumerable drugs have been tried, recommended, tried again, found wanting, and discarded. For this there are several reasons. Firstly, that no drug in particular is found useful in all cases. Secondly, that cholera epidemics vary greatly in mortality, so that it may happen that a larger proportion than usual of cases may recover under a treatment which is really of no use,—in fact, may recover, not on account of, but in spite of treatment. Thirdly, the mortality at the beginning of an epidemic being usually much greater than at its close, when the cases have a natural tendency to recovery, the drug most likely to be useful may be tried without success in the earlier cases, while the later cases recover under a treatment employed as a last resort, in the vague hope that it may be of some use.

Salol has been a good deal used during the last three years. It was recommended, in a paper in the *Indian Medical Gazette* in

1889, by Surgeon-Major F. C. Nicolson, who had found a large proportion of cases recover under its use in a recent outbreak at Patna. But since then it has repeatedly been tried by other officers without any striking success.

These cases of cholera in Saran Jail were treated with nitrite of amyl. After the deaths of the first two cases, which had been treated in the early stages with dilute sulphuric acid and opium, a circular from the Inspector-General of Jails was received, recommending that nitrite of amyl should be tried, on the advice of Surgeon-Lieut.-Colonel E. G. Russell, Civil Surgeon of Patna, who stated that he had found it useful in a previous outbreak. The directions for its use were to combine one part nitrite of amyl with twenty parts of spiritus vini recti, and that of this mixture ten minims should be given as a dose in water up to three or more hourly doses; dry cupping over the loins should also be performed. Having no prejudice in favour of any other form of treatment, I carefully complied with the instructions for the administration of the drug in twenty-eight cases, giving ♏10 of the mixture in water ℥ss., up to five or six hourly doses, and in those who survived to the following day repeating it up to three more hourly doses, also dry cupping the loins. Of these twenty-eight cases, fifteen recovered and thirteen died, a mortality of 46·41 per cent., or little, if at all, better than what might be hoped for under any form of treatment. In fact, it appeared to me to be of neither more nor less use than the other modes of treatment which have from time to time been recommended.

One of these is purgation, in the hope of expelling the cholera poison. This treatment has found favour with some almost from time immemorial. It is strongly recommended by the Greek writer Ætius about A.D. 360.[1] Sydenham, however, was as strongly opposed to it, writing, "To attempt to remove the acrid humours, the cause of the disease, by cathartics, was as throwing oil into the fire."[2] Of the purgative treatment Maclean says forcibly, "Believe me, gentlemen, cholera can purge and kill without the well-meant assistance of the physician."[3] He also tells of an Indian Army surgeon who, by his vigorous use of purgatives in cholera, earned from the Mussulman troopers of his regiment the name of Azrael, the angel of death.[4]

Most authorities agree that premonitory diarrhœa can be checked by astringents, if taken in time. Chevers,[5] Goodeve,[6] and Aitken,[7] all recommend opium at this stage, if it can be called a stage, of the disease. When the stage of collapse is fully developed drugs are useless. They are not absorbed, and if vomited are of no service;

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[1] Macpherson, *Annals*, p. 32.

[2] *Ibid.*, p. 56.

[3] Maclean, *Diseases of Tropical Climates*, p. 249.

[4] *Ibid.*, 248.

[5] Chevers, *Commentary*, p. 297.

[6] Goodeve, *Reynolds' System*, vol. i. p. 717.

[7] Aitken, *Medicine*, p. 733.

if retained may be hurtful in the reaction stage, when absorption again takes place. In the reaction stage our chief aim is to induce the return of secretion, firstly from the kidneys, and secondly from the liver. For the first the best diuretics are milk and water, which may be assisted by sinapisms over the kidneys. These may also be applied to the liver, but the latter will usually come right of itself, if the patient is otherwise doing well. Macnamara recommends tincture of cantharides,[1] but Chevers compares the use of this drug to "adding fire to fire."[2]

My own impressions are that premonitory diarrhœa should be at once checked by an opiate; that astringents, especially opium, may be useful in the early stages of cholera, before collapse has set in; that in the stage of collapse nothing should be given except cold water (ice if available, which in India it often is not), and perhaps a little milk; while in the reaction stage plenty of milk and water should be given, with sinapisms over the kidneys, while such mild diuretics as sweet spirit of nitre may also be prescribed. It is impossible to lay down any rules for further treatment, as individual cases of cholera vary so much in detail. A case of cholera, however, is always one more for treatment by care and nursing than by drugs.

Among the thirty cases of cholera described there were five in which premonitory diarrhœa was present. All, in spite of treatment by astringents, went on to cholera, and three proved fatal. This may seem to contradict the statement that premonitory diarrhœa is usually amenable to treatment. But, on the other hand, there were during July no less than forty-five cases of diarrhœa among the prisoners, six being severe cases, which at first, as mentioned above, were isolated as cases of cholera. It is impossible to say how many of these would have gone on to cholera if untreated, but I have no doubt that a considerable number would have done so.

Dilute sulphuric acid was given daily, as a prophylactic, to all the prisoners from 2nd July till the end of the epidemic. I myself used no precautions beyond washing my hands, as usual, after my jail work.

As treatment is of so little use in cholera, to mitigate the ravages of the disease we must look rather to prevention than to cure. Within the last year Haffkine has described and advised the use of vaccination with a cultivated cholera virus as a preventive of the disease.[3] Whether this method will be of service as a protection against cholera time alone will show. Cholera differs widely from small-pox and similar diseases in that one attack is not in the least protective against subsequent ones, and this must militate against the efficacy of the protective vaccine. Also it appears to me that, with regard to cholera, little reliance can be placed on experiments on the lower animals. In a natural state these creatures do not suffer from cholera, though many of them have every opportunity of contracting the disease were they liable to it. When a severe epidemic occurs in an Indian district, the proper disposal of the dead is a task quite beyond the powers of the survivors. As a rule, Mussulmans bury and Hindus burn their dead. But, even in ordinary circumstances, the so-called cremation of a corpse, with the poorer classes, among whom the great majority of deaths occur, really consists only in placing fire in the mouth and slightly singeing the body, and then transferring the body from the burning-ghat, usually built on the side of a stream or tank, to the water close by. In epidemics both fuel and labour for the proper cremation of the numerous corpses are frequently unattainable, and only a few of the more well-to-do are properly cremated. The bodies of the rest are thrown into the water, and consumed by crocodiles and fishes. In many cases, also, there is no attempt either to bury or to burn the bodies, which are simply cast out on the nearest waste land. Even if buried, the graves are frequently so shallow that animals easily dig up and devour the bodies. In either case the final disposal of the body is that it is devoured by animals, usually dogs, jackals, and vultures. Now, this has been going on from time immemorial, yet I do not think that any one ever heard of these animals contracting cholera, though dogs, at least, suffer frequently from diarrhœa. Under these circumstances, I think that arguments derived from experiments on animals are at least open to doubt.

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[1] Quain's *Dictionary of Medicine*, 1885, article "Cholera," p. 242.

[2] Chevers, *Commentary*, p. 309.

[3] *British Medical Journal*, February 11, 1893, pp. 278-282.

From the point of view of public health, the disposal of the dead by exposure, and subsequently by their becoming food for wild animals, unpleasant as it may be to sentiment, is not without advantages, as nothing is left of the bodies but the cleanly-picked bones, which are not dangerous to the survivors. On the other hand, no means of disposal could be worse than the throwing of corpses into water, still or running. The former is the most objectionable in one way, as the pollution is more concentrated, for the surrounding inhabitants will drink stagnant as readily as running water; while the latter carries its contamination through a wider area. In a season of severe epidemic every flowing stream receives some cholera corpses, often a very large number, which must materially assist the spread of the disease.

To lessen the destructiveness of cholera we must look, I think, rather to sanitation than to vaccination. It is hard enough in Europe to get proper attention paid to sanitary measures, but the difficulties which meet a health officer in this country are small compared to those which confront him in India. In that country we have one advantage in the fact that, owing to the warmer climate, fresh air is for great part of the year welcome to all. This advantage is almost neutralized by the customs of the people, the seclusion of the women in the zenana being the first consideration in the construction of the houses of all Mussulmans and of the better class of Hindus.

And two difficulties, not felt in this country to anything like the same extent as in India, are,—first, that the soil on which almost all villages and towns are built is saturated with the filth of centuries; and, secondly, that absolutely no help can be expected from the people themselves. It is not sufficient to provide a good water supply, but access to a bad one must be prevented, as the vast majority of the lower classes, at least, would rather take the bad water, even though they themselves considered it bad, than go a little further to get a water of better quality.

The sanitary measures necessary almost everywhere are,—(1), provision of a pure water supply; (2), more attention to conservancy and removal of fæcal filth; (3), better drainage; (4), prevention of overcrowding. Such is, I think, the order of urgency of sanitary measures, as a general rule, though, of course, the degree of urgency of the different reforms varies in different towns. In some, which have by nature a fair water supply, better drainage is the most urgent requisite at present; in others, better conservancy is the most necessary. Several of the larger cities have within the last few years got an improved water supply. In almost all municipal towns, more or less (generally less) attention is paid to conservancy. All have some sort of surface drainage, though in very few is the drainage satisfactory. In few, if any, is any attention paid to overcrowding. But to improve the sanitary condition of Indian cities, let alone of the country generally, will be a work of years, if not of centuries. A volume might be filled with a description of the insanitary conditions present in many towns of moderate size.

VI.—SUBINVOLUTION AND ITS TREATMENT.

By **James M. Bennett**, M.D., Consulting Physician to the Liverpool Dispensaries; late Surgeon to the Liverpool Surgical Home for Diseases of Women.

The reason why the uterus should not at all times efficiently perform the important function of involution can readily be understood if we first study the variety of changes which the organ undergoes with regard to its magnitude and constitution, the great alterations which take place in its nervous and arterial supplies, and the differences of position which it has to accommodate itself to. The liability of these changes of structure and position to become permanent can well be assumed when we remember that the healthy action of the uterus, as a whole, is absolutely necessary to perfect involution, and that any very abnormal alteration in the balance of its nervous, arterial, or organic forces may prove sufficient to prevent a resumption of its original healthy tone. Should the nervous power which commands the circulation permit too great a quantity of blood to be supplied and to remain in the part (hyperæmia caused by nervous hyperasthesia), a change must be expected such as the language of Barnes well describes when he says, "As a general result the mucous membrane becomes thickened and distended, and the connective tissue makes most exaggerated growth, supply so far exceeding healthy demand that the resulting condition is generally uterine enlargement with its frequent displacements." Subinvolution in its earlier and more remedial stages, I believe, is too frequently overlooked, that the post-partum patient, well satisfied with her apparent progress towards recovery, and anxious to escape from the trammels of the doctor and the nurse, fancies herself able to resume duties both mental and bodily which might well be deferred (in many instances of weak constitution) until the medical attendant had quite satisfied himself, by digital examination, that the uterus had returned to somewhat near its natural standard of weight, size, position, and mobility. To ascertain the weight may appear at first a difficulty, but a little practice and the possession of a slight amount of tactile power will soon overcome it, and what seems so completely beyond our reach assumes aspects the most opposite. Change of weight: the process may briefly be stated to consist in the fact that a body which prior to gestation only weighed from one to two ounces reaches as many pounds at the full period, and has soon after parturition again to resume almost its previous weight. In this country four weeks, on the Continent six weeks, is the term in which a return to a normal condition is expected. I believe all gynecological writers consider that the latter period is not too long, even where functional tone is perfect. With regard to position, we have to ascertain that neither flexions, versions, nor prolapsus exist. That they are very frequent, sometimes as an effect and sometimes as a cause of arrested involution, can hardly be denied; but I think that most modern authors agree in the opinion that it is in the former category that they should be placed; and that Velpeau's[1] axiom that most part of female diseases arise from flexions, not excepting engorgements, was a mistake. The measurements ought not much to exceed the natural standard, instead of reaching, as they often do in subinvolution, to as much as 4 inches.

Mobility.—It is of the utmost importance that we should find the uterus free after parturition, at full time, or abortion, the fixing of the organ by cellular effusion often passing unobserved, and is no doubt a frequent source of subinvolution. Aphorism of Barnes, "That whenever the mobility of the uterus is arrested, whether the cause be external or internal, a degree of hyperplasia is the result." The fixing and consequent change in the circulation of the organ account in a great measure for the enlargement. Few uterine alterations have caused such diversity of opinion with regard to its exciting causes and pathology as subinvolution, whether known under the synonyms metrite chronique of Lisfranc, Jobert, Becquerel, and post puerperal metrite, Chomel metrite chronique vel-parenchymateuse of Recamier, chronic d'emblè of Gallard, habitual hyperæmia of Klob, infarctus of Kiwisch, alveolar hyperplasia or subinvolution of our own country and America. Gallard was the first of the French school to use even doubting language as to its origin when he speaks of what he terms puerperal metrite as of such an insidious character that it often passes unnoticed amongst the sequelæ of labour. But much as many may feel disposed (at the present time) to doubt their premises with regard to the pathology of the disease, we must remember that they have had many very earnest workers, Tounelli, Dugies, Aran, Becquerel, Nonat, Blatin-et-Nivet, and many others; and as Aran positively asserted that he found pelvic peritoneal adhesion in a very large percentage of his post-mortems, we can readily understand their unwillingness to accept pathology like Klob's, which denies the necessity or the presence of inflammatory action, and attributes all the hypertrophic changes to malnutrition and consequent want of action in the parts engaged. As he says, purely passive congestion is capable of inducing hypernutrition and hypertrophy of the connective tissue; and where in the whole female economy have we a field more ready to accept such conditions as the uterus when we consider its varied changes of excitement, enlargement, and subsequent contraction? As Klob well puts it, proliferation of connective tissue is frequently developed after repeated deliveries without any previous or existing inflammation; and again he says, "Its causes must be sought for in habitual hyperæmia." No modern author gives a better description of the process of subinvolution than Barnes, who mentions a number of supposed exciting causes, but hesitates to attribute it as a frequent product of injury to the os and cervix, as Emmet has done. The latter believes that although faulty nutrition may retard or stop the process of involution, still that in a great proportion of cases involution being impeded, the faulty nutrition was the effect of common causes, amongst which he gives displacement, almost, as it were, coming back to Velpeau's ideas. The last edition of West, by Matthews Duncan, gives inflammation as a necessary factor. He says: "The occurrence of inflammation appears to interrupt these processes, for though fatty degeneration of the tissues takes place, yet the removal of the useless material is but imperfectly accomplished, while the elements of the new uterus are themselves, as soon as produced, subjected to the same alteration, and that it is by no means necessary that the inflammation be very severe in character, but that a degree of inflammatory action, far short of what is requisite to endanger life or to occasion much suffering, may yet interpose a great obstacle to the complete involution of the womb." To sum up the pathology of this disease, the language of T. G. Thomas perhaps expresses it more succinctly than any other when he says, "Subinvolution, arising as it does from arrest in the absorptive powers, allows the superincumbent connective tissue to remain, although its accompanying muscular fibre has disappeared,"—as he terms it, an arrest of retrograde metamorphosis. I am of opinion that an adynamic condition of the neurateria of the uterus may have more to do with subinvolution than has yet been recognised, whether arising from local or general causes. Perhaps most commonly it occurs that there is a combination of both, and that unless the nervous tone generally is at a very low pitch, and that the amount of local pressure or injury is of extreme nature, sufficient power should exist to adequately balance the quantity of blood supplied to and discharged from the uterine tissues, as may be evidenced in the case of the robust country woman who, being in possession of strong nervous organisation, escapes such sequelæ even after the most trying ordeals of difficult labour, and often under the disadvantages arising from want of sufficient rest and good nursing. Can this immunity be accounted for otherwise than by the fact that their nerve power has not previously been exhausted by mental worry, by the artificial modes of life, and by the poisoned atmosphere which the less fortunate inhabitants of large cities have to endure? In addition to these causes, is it not reasonable to suppose that the severe strain which modern education imposes will in the future render females less able to sustain the shocks of childbearing and the subsequent perfection of uterine involution,—a process which if equal to Heschl's[1] premises when he says that the proper substance of the uterus undergoes so complete a change into molecular fat that not one single fibre of the uterus existing previous to childbirth remains behind, and that a perfectly new organ has to be built up, which only requires the stimulus of fresh conception to complete. Then, truly, woman's brain should not be exhausted to the same extent as man's if we wish them to successfully combat such trials, leaving aside the question of mischief to the future offspring. The nerve power of the female sex has been considered of a feebler type than the male, with exceptions such as those races who gloried in their Amazons. That there is a great difficulty in attempting to prove the presence of nerve-failure I freely admit; more especially when some authorities, as M. Boulard, go so far as to declare the uterus to be an organ lacking in nervous supply. However, the deductions to be drawn from the reasoning and researches of Tiedman and R. Lee still hold their own, and, I think, may confidently be arrayed in opposition. Virchow says much against nerve force participating in the process of nutrition; but, on the other hand, Bernard, Waller, Brown-Séquard, Budge, Schiff, Wharton Jones, and Lister are to be reckoned in its favour. M. Claud Bernard asserts that change in the nerves of a part, such as section or irritation, is usually followed by a disturbance in the function or circulation of the part. M. Brown-Séquard sometime since communicated a paper to the Academie des Sciences, entitled "Arrêt des Echanges entre le Sang et les Tissues," in which he says that in his opinion a nervo-dynamic influence is the cause of this arrest. Secretions being suspended, animal heat is lessened, and serious and rapid modifications take place in the respiratory and circulatory apparatuses. Acting upon the supposition that the uterus has a nerve supply, that such is derived from several sources, and that the principal are supplied from the hypogastric and renal plexus with small branches of the sympathetic, we may attempt to trace some want of tone to the origin hinted at. Dr Donald MacAlister, in his Croonian Lecture, quotes Dr. Gaskill, who said that the action of the inhibitory muscular nerve or tracts in the cord are subject to exhaustion and paresis as the result of over-stimulation, and that the opposite acting fibres are to be regarded as catabolic and anabolic respectively, and that paresis of the vaso-constrictors are followed by paresis of the vaso-dilators. I think that, in the first place, if we can be satisfied with the truth of Schiff and Oehl's statement that nervous influence may be propagated by the chemical hypothesis, that stimulus, whether mechanical, thermal, or electrical, when applied to a nerve, excites a chemical change in its molecules or elementary particles, which travels along the nerve like fire to a pile of wood or a train to a parcel of gunpowder. Some of the difficulty will disappear, more especially if we can prove that such stimulus is applied, and I think it will hardly be denied that in females nervous influences are more quickly and more thoroughly shown in uterine disturbance than in any other. In subinvolution I believe that the nervous power is so altered in its constitution that vascular congestion of an immoderate amount is permitted, which in itself further increases the mischief by paralyzing the nervous control over the emptying channels, the loose cellular tissue of the lately pregnant uterus being well suited for such lesion to occur. And when we consider the rapidity of its growth, the enormous distention of its walls, the pressure both from within and from without which it has to bear, as well as the nervous shocks conveyed from mental impressions which, slightly as they may be acknowledged in the present day, exert an influence so well recognised by those of classic times that they sought for their women scenes pleasant to their senses, so that no injury might accrue either to the mother or her fœtus. One of our best used physiological text-books speaks thus of nervous action:—"The influence of the mind in the production, aggravation, and cure of organic disease is matter of daily observation, and a sufficient proof of influence exercised on nutrition through the nervous system; also, that if a nerve has been compressed and bruised between the point of irritation and the muscle, the effect of such an injury being the same as division, and that injuries to portions of nervous centres or individual nerves is frequently followed by defective nutrition of the part supplied. Have we not in the post-partum uterus an organ that has been subjected to the severe ordeal of mental impressions which in this age are often of no mean character? Has not its nervous organism extreme dangers to repel in the often repeated changes from a state of hyperenergia to that of hyperasthenia, and vice-versa? Are not its walls subject to pressure and bruising such as may from its unseen nature escape notice?" I believe that a variety of apparently trivial causes may powerfully conduce to those conditions, such as constipation (that obstinate constipation to which anæmic women wanting in nerve tone are martyrs), may be given as one not very infrequent source of injury. I am convinced that it is oftener the cause of arrested involution than is generally supposed. Of this I have had many proofs, such as feeling the enlarged uterus compressed by a colon distended with impacted fæces, and wedged so thoroughly that the difficulty was to know how involution could under such circumstances be effected,—the position being that a movable organ is so fixed that it is effectually prevented from completing those changes which are associated with its healthy condition. That inflammatory action is so infrequent in these subjects can only be explained by advanced deterioration of nervous sensibility, which in many instances must reach an extreme degree, otherwise how account for cases where the presence of fæcal accumulations, equal in magnitude to moderate-sized ovarian tumours (for which I have more than once known them mistaken), whose presence has for long periods been borne without the slightest complaint of either pain or uneasiness? It may be asked here, Is faulty nutrition the cause or effect? Those severe lacerations of the cervix, so ably described by Emmet and Palin, as well as other injuries to the uterus itself or contiguous parts deriving the same nervous supply, are often, I am sure, a fruitful cause of arrested involution by the division, bruising, and subsequent loss of function in a number of nerves. The long-continued pressure of the fœtal head in tedious labour (more especially where the delay is in the first stage), in like manner proves a source of mischief much more frequent and complete than has been recognised. Amongst the numerous others described by gynecologists, I believe in many cases a marked predisposition exists, whether arising from simple enfeeblement of the general health or dependent upon some concealed taint, such as syphilis, struma, gout, etc., etc., and that in such patients subinvolution may show itself with exciting causes of so slight a nature that without a complete history, and more especially that pertaining to ante-marital menstruation, we may signally fail to discover disturbance sufficient to account for so great a want of tonic contraction, more especially when it is found in subjects whose general physique would contra-indicate the presence of such a lesion.

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[1] Velpeau, *Maladies de l'Uterus*, 1854, vol. i. p. 112.

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[1] Heschl, *Wiener Zeitschrift*, and Schmitt, *Jahrbucher*, vol. lxxxvii.

The treatment, as might naturally be expected from the great differences of opinion with regard to its origin and cause, have materially changed. Although not so rapidly as we should have supposed, the *rôle* of medication was long continued on the old lines, Becquerel dividing those used by the school to which he belonged into Antiphlogistique Emmoliente et Calmante Narcotique ou Stupéfiante Astringento Caustique Révulsive et Hydropathique, which included such a variety of agents and such different modes of application, that to attempt their description would occupy a space which the result would not justify. Suffice it to say that the cautery, in chronic enlargement of the uterus, was considered almost specific, Jobert using it fearlessly. Coming to our own times, Sir J. Y. Simpson strongly advocated the use of counter-irritants applied externally to the surface of the abdomen or sacrum; in fact, he placed his chief reliance on the free use of antimonial or croton ointments, strong tincture of iodine, and last but most esteemed favourite, cantharides, which he applied in the fluid, as he says, "to a patch the size of a crown," and then gradually surrounding the patch with a number of others of like diameter, one being added every third or fourth day, until the original central point has been surrounded by a ring of five or six distinct blistered spots, at the same time keeping the cervix uteri immersed constantly in ointments of mercury, iodide of lead, bromide of potassium, or other remedies likely to stimulate the absorptive processes. Within a few years a great change has taken place in the treatment, attributable, no doubt, to the establishment of a greater degree of confidence in that pathology which rejected inflammatory action as being the principal or even a necessary factor in the production of subinvolution. In accordance with these ideas, we have the following indication to fulfil in our attempt to stimulate or assist Nature when she fails to perfect uterine involution. In the first stage, according to Klob, the areolar tissue is congested, containing more blood than normal, and the entire uterus increased in weight and size. It is in this stage, if we are fortunate enough to meet it, that properly directed treatment efficiently carried out ought to be crowned with the largest measure of success. Our primary efforts should be directed to the early reduction of local hyperæmia, to the well-regulated upholding of the enlarged organ, so as to relieve the weight from its weakened natural supports the ligaments, and thereby save them from that over-strain which might injure or so far exceed their tensile capacity, that their future sustaining power would be materially deteriorated or wholly destroyed. We must next endeavour to stimulate to tonic contraction the muscular fibre of the uterus, and arouse the torpid processes of absorption, so as to get rid of that hypergenetic tissue which by its presence causes the condition which we are considering. With the view of relieving the organ of the extreme quantity of blood which its vessels contain, abstraction of blood by cupping, leeches, and scarification have been used with varying measures of success. To gain the full benefits of this practice I assume that we should, if possible, get our patient to submit to severe rules, almost as severe with regard to rest as those laid down by Astruc for the treatment of uterine ulcers, who said "To charge the patient to abstain from all kinds of exercise, and to keep constantly laid down on a long seat; and for the same reason it is fit for a married woman that she should lie separated from her husband. They should, for the same reason, guard against all the passions of the mind that may agitate it, as grief, uneasiness, anger, etc." Although difficult to enforce, all this is necessary in many cases where the enlargement is well marked, if we hope to escape passing into the second stage of Klob, where most of our best directed treatment is abortive. Of the different methods adopted for the abstraction of blood from the over-gorged uterus, scarification, when efficiently carried out by means of the sharp-pointed scarificator, seems the least objectionable, as the quantity removed can only be small and the general shock proportionately slight. Should a larger drain appear necessary, it may be much increased by the previous use of a small special dry cup fitting the os. The repeated use of the scarificator conducing to these results more perfectly than its too free introduction on a single occasion leads to more prolonged weeping, and tends to assist osmotic agents by keeping open channels for the escape of disintegrated particles, and providing means of access for substances which may act directly on the tissues engaged either in furthering absorption or exciting contraction. This may be very effectually stimulated by the repeated use of the hot-water injections of Emmet, the good effects of which cannot be too highly estimated as a soothing agent to allay that local irritation which is so constantly present, and also as a powerful aid to the maintenance of tonic contraction. Its advantages must have been experienced by any who has thoroughly fulfilled his very explicit directions. To obtain the benefits of this very important portion of the treatment, every particular with regard to temperature, position of the patient, etc., ought to be strictly enforced. When the congestion has been relieved, the question of artificial support may arise, and if the uterus has attained an exaggerated degree of enlargement, the benefits to be derived therefrom ought not to be deferred until displacements have become established. A well-regulated glycerine ring or a small Hodge with elastic bars will remove that uncomfortable sensation of weight and dragging which is often caused by the weight of the hypertrophied organ stretching the enfeebled ligaments beyond their capacity, and necessarily impeding the circulation by unduly pressing upon the space requisite for the vessels to sustain their properly balanced action. "From the use of the warm spinal douche I have found the most signal benefit, and consider it an auxiliary of great power. Its application may be easily effected by means of a large syphon, arranged as the uterine douche, but terminating in a *fine* spray, like the rose of a garden-engine." From its steady employment many cases with exaggerated nervous symptoms have made good recoveries even where the uterine enlargement was becoming chronic, the general tone being usually improved by its prolonged application.

A well-adjusted abdominal belt will assist in supporting the enlarged uterus, tend to prevent alterations in its position, and possibly stimulate tardy contraction, if the pressure exerted does not exceed proper limits and is not simply used as a corset to attempt, in fact, what is called improvement of figure. Such ought to be strongly condemned as highly injurious. The agents to be depended upon to obtain tonic contraction are local and general stimuli, amongst which ergot has taken a high place, whether given internally in repeated doses, separately or in combination with small doses of strychnia, or applied locally to the interior of the uterus when the os and cervix are patulous, a good form being to mix one grain of pure ergotin with five drops of glycerine; or the plan from which I obtained the best results, that of interstitial injection through the substance of the os, introduced by means of the modified hypodermic syringe,[1] which I introduced for the treatment of chronic cervical metritis. From this practice I have seen very speedy relief to follow, more especially when preceded by efficient scarification and the repeated use of the hot-water lavement. In the subacute stages of subinvolution, iron, strychnia, and quinine have proved of much advantage in building up, but from the combination of *phosphorus*, strychnia, and quinine I have found greater benefit, more especially when the excitement which might have arisen had been steadily controlled by occasional doses of the bromide of potassium. The application of strong caustics to the interior of the uterus seems to me more suited for cases advanced to the commencement of the second stage of Klob. Before the parenchyma becomes deficient in bloodvessels from over-compression of the capillaries caused by the contraction of the newly-formed connective tissue—in fact, before the true sclerosis of Gallard is reached, a stage in which endometritis and displacements are almost always present—stimulation here may excite the torpid circulation, arouse the enfeebled glandular action, and does undoubtedly succeed in cases otherwise hopeless. The nit. argent of Simpson, the pure nitric acid of Athill, the dried zinc points of Braxton Hicks, the careful use of the curette to remove all vegetation, have each done good service when used at this time, but their frequent necessity might, I think, be largely avoided could the patient and her friends be persuaded at an earlier period that rest was so urgently required, and that disease of a permanent character might be avoided by the supervention of measures of a preventive nature. The adoption of such a course would, I believe, tend to lessen the number of cases of arrested involution, and were the danger pointed out and fully explained to the post-partum patient and those in attendance, much after-trouble might be avoided, and the disease in its second stage made almost to disappear from the register of the gynecologist.

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[1] *Lancet*, November 2, 1878.

From my note-book I give what I consider a typical case of each stage of the disease. No. 127, date May 10th, 1884, C.M., aged 25 years; married; number of children, three; number of abortions, two; time since last pregnancy, three months; symptoms during its course sudden and violent metrorrhagia, severe pains in the back, dragging sensation round the hips, bearing-down pains, and a feeling of weight and enlargement at the lower part of the abdomen. Supposed cause—retarded involution; physical signs, by touch, great increase of weight; uterus much lower than natural; no version nor flexion; by speculum, os much congested and enlarged. *Metrorrhagic* weeping; by probe, not used; by bi-manual examination, uterus voluminous, tender to the touch, appears almost as large as at the sixth month of gestation. Diagnosis—subinvolution in the first stage; active hyperæmia. Treatment—perfect rest, hot douching; temperature 100°; free scarification; fully two ounces of blood withdrawn; gr. xx. of potass. bromidi three times daily in the infusion of quassia; hot douching continued night and morning until May 16th. A pill composed of 1-50 of a grain of phosphorus, 1-24 of strychnia, and one grain of quinine was now ordered. May 18th, uterus much reduced in size and weight; engorgement again relieved by scarification; less than one ounce withdrawn. May 19th, interstitial injection of ergotin solution was practised, which produced such active contraction that ¼ gr. morphia pessary was introduced. May 23rd, ergotin again used; same general treatment. May 26th, ergotin repeated. May 30th, the uterus has now nearly assumed its natural size and position. An air pessary was introduced and the patient went into the country for a fortnight, which was prolonged to a month. July 1st, uterus is almost normal. Menstruation has been effected without pain or irregularity, and the nervous tone appears to have resumed a healthy condition.

No. 101, 1st June, 1880.—M. I., aged 30; married; number of children, five; number of abortions, one; time since last pregnancy, eight months; duration of present illness—described herself as having never properly recovered from her last confinement. Symptoms during its course—metrorrhagia frequent but small in quantity; pain and sense of weight and bearing-down. Supposed cause—subinvolution. By touch, uterus found to be retroverted and of large size; deep cervical tear by speculum; os advanced towards symphysis pubis; patulous; sanious matter escaping. By probe, uterine cavity measures nearly 3¾ inches; retroversion well marked by the direction of the handle. By bi-manual examination uterus almost above the pubes; fundus in the hollow of the sacrum. Diagnosis—subinvolution, with retroversion and endometritis approaching the second stage of Klob. Treatment—reposition of the verted uterus, effected without much pain or difficulty, a well-fitting Hodge placed in position, and rest enforced. June 4th, hot douche and free scarification (as there was a good deal of nervous excitement, gr. xxx. doses of pot. bromidi ordered three times daily). June 6th, hot douche has been continued regularly. June 8th, scarification and an attempt at the use of the ergotin solution; os and cervix so indurated that the syringe would not work. Ergotin applied freely by means of Playfair's probe to the interior of the uterus; well-marked contraction produced. Cotton plugs soaked in glycerine and iodine kept constantly applied to the os. June 12th, uterine measurements 2¼ inches; weight much less. Hodge's pessary removed, os much softened, and the interstitial injection of about half a drachm of a solution, composed of ten grains each of the iodide and bromide of potassium, half a drachm of tr. iodi., and distilled water to two drachms, was forced through four pretty deep punctures made with the point of the scarificator (at equal distances) into the substance of the os, and cotton pledgets reintroduced. June 15th, interstitial injection repeated. June 25th, uterus almost normal in weight, size, and position. Phosphorus, strychnia, and quinine given three times daily since the 12th. June 30th, went into the country. On her return, July 25th, she was examined and the uterus found healthy with the exception of the tear, which was pared and sutured upon August 28th, proving perfectly successful.

March 1st, 1881.—J. B., aged 29 years; married; number of children, one; number of abortions, six; time since last pregnancy four years. Duration of present illness uncertain. Symptoms during its course—repeated attacks of metrorrhagia coming on soon after first pregnancy; constant pain in the lower lumbar region; extreme debility. Supposed cause—subinvolution; physical signs: by touch, uterus large, os tender to the touch; patulous, no version. By speculum, os large, pale, and leathery looking; muco-purulent discharge. By probe, measurement 4 inches. By bi-manual examination uterus very large, filling the suprapubic region almost to the umbilicus. Diagnosis—subinvolution. Treatment—perfect rest, free scarification, a large quantity of blood withdrawn, potass. bromidi in full doses. Patient lost sight of until January 3rd, 1883. Has been under a variety of treatment since last seen, but according to her own statement has given none of them a fair trial. At this date the physical signs were—by touch, os large and brawny, patulous to such a degree that the finger-point could be pressed some way into the cervical canal, which seemed to have, as it were, lost all contractility. By probe, measurement 4¾ inches; when the instrument was rubbed against the walls a grating sensation was elicited. By bi-manual examination the uterus fills a large space, but seems smaller than when last examined. Diagnosis—subinvolution in an advanced stage. Treatment—the interior of the uterus was gently curetted, and afterwards brushed out with fuming nit. acid. Phosphorus, quinine, and strychnia pill ordered; hot water douche assiduously employed. January 7th, measurement, by probe, 4 inches. Nit. acid repeated. January 12th, by probe, measurement 3½ inches, uterus painted with tinct. iodi.; glycerine and iodine constantly applied on cotton pledgets to the os. January 21st, measurement 3 inches; ergotin freely applied to the uterine surface without producing any symptom of contraction. January 24th, found to be menstruating; not examined. January 31, measurement slightly under 3 inches. She now went into the country, where she remained until the 21st of April. When examined her general health was found to be much improved, but the measurements were very slightly, if at all, altered. Dried zinc points were tried, as also a galvanic stem, without producing any apparent benefit.

In conclusion, I wish merely to remark that the quantity of blood to be obtained by scarification, the density of the uterine fibre, as evidenced by the resistance to the scarificator, were the points I found of most assistance to me in forming a judgment in doubtful cases, care being always taken that scarification was not practised at a time when menstrual excitement might by its presence lead astray; likewise that the instrument was kept in such an equal state of efficiency that it neither by its sharpness cut too readily nor yet by its bluntness required extra force.

The degree of fixity of the organ is of the greatest import, as in the worst cases it is generally found that well-organised adhesions exist.

VII.—NOTES OF ABDOMINAL AND PELVIC CASES—
7TH FEBRUARY TO 15th MARCH 1894.

Operated on by **Rutherford Morison**, M.B., F.R.C.S. Eng. & Edin. Reported by **M. Macgregor Rattray**, M.B. C.M. Edin. Remarks by Mr **Morison**.

A visit to Newcastle in the spring of this year enabled me to avail myself of Mr Morison's kind offer to witness his operations.

The abdominal and pelvic cases appear to me to be of such interest and variety as to be worthy of a place in the *Edinburgh Medical Journal*. For many of the details I am indebted to Mr Morison's notes, which he has placed at my disposal.

From 7th February to 15th March there were in all twelve operations, viz.:—Five ovariotomies; one nephrectomy; one amputation of appendix vermiformis for acute appendicitis with peritonitis; one amputation of a fibro-cystic tumour of the uterus; one vaginal hysterectomy for cancer of the cervix; one lateral lithotomy for vesical calculus; one operation for strangulated femoral hernia, with radical cure; one operation for ectopic gestation. Of the twelve patients, one died,—a case of gangrenous and suppurating ovarian cyst; eleven recovered. The cases of femoral hernia and ectopic gestation I was not fortunate enough to see, and, consequently, will not mention further.

CASE I.—*Dermoid Tumour of Ovary, size of cocoa-nut, adherent in Pelvis. Ovariotomy. Recovered. Patient of Dr Smallman Robson.*

Mrs H., æt. 24. Complains of pain in lower part of bowels.

History.—For many years this patient has had the same pain occasionally, but latterly its occurrence has been more frequent. It has never laid her up, however, and so far as she knows is not increased by anything. Her previous health has always been good, and she has never had any bad illness.

The only special point in the family history is that her mother died at the age of 30 from some supposed intestinal trouble.

Present Condition (29th January 1894).—A healthy, cheerful looking person; brown eyes and hair; tongue slightly furred; bowels regular; appetite good. The abdominal viscera are normal, except that the right kidney is movable. The other systems give negative evidence. The urine is normal.

Local Examination.—Examination of the abdomen gives no information.

P.V.—In Douglas's pouch can be felt a tumour the size of a child's head, being at some parts hard, at others soft. It is so far fixed that it cannot be raised out of the pelvis. The uterus can be felt distinct from the tumour, situated to the left and anterior. Dr Robson sent her into Mr Morison's private hospital with a diagnosis of dermoid tumour of ovary, which Mr Morison confirmed.

Treatment: Ovariotomy, 7th February 1894.—An incision was made between the umbilicus and pubis, and the tumour was turned whole out of the abdomen after separating adhesions at the back of the growth. The pedicle was then tied by a series of interlocking silk ligatures, and the wound closed.

Pathology.—A dermoid tumour of the ovary about the size of a large cocoa-nut. It contained sebaceous matter, a long coil of light brown hair, and a few spicules of bone.

After-progress was uneventful, menstruation commencing normally on the 9th February, fifteen days after the operation.

CASE II.—*Malignant adherent Dermoid Tumour of Ovary. Ovariotomy. Recovered. Patient of Dr Welford.*

Mrs A., æt. 58. Complains of swelling in bowels, and pain.

History.—About eight months ago patient first felt a sensation of bearing-down and weakness at the lower part of bowels. About nine weeks ago she first noticed a little hard lump on the left side, which remained there about a month and then moved to the right side, where it has remained since. It has grown very rapidly, but only within the last seven weeks has she been confined to bed. The only subjective symptoms are the bearing-down sensation and weakness. Her health has always been good up to the present illness. Menstruation commenced at the age of 17 and ended at 46. She has ten of a family, the oldest being 40, the youngest 18 years of age.

There is no family history of disease.

Present Condition (17th February 1894).—Patient is a thin, delicate, ill-looking woman, appearing to be ten years older than she is. Her appetite is poor; bowels confined; tongue red, disposed to be dry. She sleeps badly and is depressed in spirits.

Local Examination.—Abdomen slightly prominent below umbilicus and bulging towards the right side. The bulging is quite prominent midway between the right anterior superior spine of ilium and the umbilicus. On palpation a tumour is distinctly felt, its left upper and outer limits reaching from the middle of left Poupart's ligament to within an inch from the umbilicus, and on the right side from the umbilicus to the anterior superior iliac spine. On the right and towards the front of the tumour a hard nodulated growth, about the size of half an orange, can be felt, apparently movable, lying in the front of the bulk of the tumour, which is cystic. The upper limit of the cystic portion is well defined; the hard tumour is tender to the touch.

P.V.—A cystic swelling is felt, filling up the right side and anterior portion of the pelvis. The fundus uteri cannot be defined, but appears to lie on the back and to the left of the tumour, with which the cervix moves.

Treatment: Operation, 20th February 1894.—The abdomen was first opened in the right linea semilunaris, and the tumour was tapped. A large solid portion of the tumour in front made it necessary to enlarge the primary incision, which altogether measured about 6 inches in length. By detaching adhesions between Douglas's pouch and the back of the cystic portion of tumour, and ligaturing the pedicle with a Staffordshire knot and dividing it, the tumour was removed. After sluicing out the peritoneal cavity and thoroughly drying it (for some of the contents of the tumour escaped into the peritoneum), the abdominal wall was closed by a series of silk sutures passing through its whole thickness. No drainage-tube was used.

Pathology.—A malignant dermoid tumour of the ovary. There were no adhesions to the malignant portion of the growth. The cystic portion contained a fluid like intestinal contents, with cholesterine in abundance, sebaceous matter, and a large coil of hair. The malignant, solid portion was the shape and size of a large cæcum. Microscopically it was a typical squamous-celled epithelioma with a fine fibrous tissue stroma infiltrated with round cells.

After-progress.—The bowels were moved for the first time since the operation on the 24th February, after repeated doses of pills and two soap-and-water enemata. The patient made a good recovery, the melancholic appearance soon disappeared, and she left for home, healed and in fair condition, on the 9th March 1894, seventeen days after the operation.

Remarks.—Dermoid tumours of the ovary are, on the whole, the most vicious of ovarian tumours. They are subject to inflammation; suppuration in them is not rare; their pedicles frequently become twisted, and malignant degeneration occurs sufficiently often to accentuate the demand for their early removal; finally, to complete the accusation, I may mention that a large dermoid tumour of the ovary buried in the broad ligament, on one occasion gave me as hard an hour's work as I have ever had in the abdomen.

CASE III.—*Large Ovarian Cyst enucleated from Broad Ligament. Ovariotomy. Recovered. Patient of Dr Laing.*

Miss W., æt. 29. Complains of a swelling of bowels.

History.—The swelling was first noticed by a friend in October. At Christmas (2½ months ago) she had pain after taking food and fulness, and the abdomen was noticed to be definitely swollen, as she had to have her clothes let out. Since then the swelling has steadily and rapidly increased. A week ago she first noticed that her legs were swollen.

Her health has not been very good for the last ten years, but she has never had any bad illness.

Her family history is not good. A brother and a sister died of consumption; her mother is still alive at the age of 72, but is very delicate.

Present Condition (27th February 1894).—Patient is an anæmic, delicate-looking girl. The tongue is furred, bowels constipated. There are patches of psoriasis over the body, legs, and head, which a sister has also. She sleeps, as a rule, fairly well, but is of a nervous temperament. The pulse rate is 48 per minute. The legs are much swollen, and pit on pressure. No trouble on urinating. The urine, on testing, shows a trace of albumen.

Local Examination.—The abdomen is evenly distended and rounded in front, rather larger than a full-time pregnancy. On palpation, the abdominal cavity feels as if it were filled with a large cystic tumour, in which fluctuation is distinct in every direction. The tumour can be moved from side to side. The recti muscles stand out from it on exertion. Some small nodules (cysts) can be felt at the upper part. On percussion, the tympanitic corona can be made out at its upper limit, and the note in the flanks is tympanitic. It descends a full inch from its usual limit above on forced inspiration.

P.V.—The cyst can be felt bulging into the pelvis, the uterus lying behind the tumour, judging by the relation and position of the cervix, but the body of the uterus cannot be defined either from vagina or rectum.

Treatment: Ovariotomy, 2nd March 1894.—An incision was made from the umbilicus to the pubis. The tumour was then tapped, emptied, and the bulk of it drawn out free from adhesions. On examining its attachments, the tumour was seen to dip deeply down into the pelvis, and to have no pedicle, being buried in the broad ligament. The Fallopian tube and peritoneum, forming the upper part of the broad ligament, were divided near the uterus, and a finger pushed in between the tumour and its peritoneal capsule, which was separated up to the outer side. Every bleeding vessel was secured by clip forceps as the separation proceeded, and the outer part of the capsule and infundibulo-pelvic ligament were tied in a Staffordshire knot before their division. The bleeding vessels, which had been clamped when divided, were tied, and the raw surface then covered by suturing the stripped peritoneum over it. The abdominal wound was closed with three tiers of specially prepared catgut sutures, uniting the peritoneum, the muscles and aponeurosis, and the skin of the abdominal wall. The left ovary was found to be quite normal, and was left *in situ.*

Pathology.—The tumour was an ordinary multilocular cyst of the right ovary, which had burrowed into the broad ligament.

After-progress.—The wound was dressed for the first time since the operation on 11th March, ten days from the operation. The skin stitches had been absorbed, and the wound was entirely healed. Her recovery was rapid, and she left for home well on the 15th March 1894, thirteen days after the operation.

Remarks.—The chief difficulty in broad ligament tumours is to get a fair start in separating the peritoneum covering them. Since I discovered that by dividing the Fallopian tube stretched over the tumour a loose bed of cellular tissue underneath the tube was struck, I have experienced no trouble in enucleating them.

CASE IV.—*Ovarian Cyst, Tapped and Leaking. Peritonitis. Ovariotomy. Recovery. Patient of Dr Finney.*

Mrs S., æt. 25. Complains of tumour, and water in bowels.

History.—About seven months ago patient first noticed a swelling outside vulva. Six months ago she suffered some pain, and felt a hard lump in the right side of the abdomen. The lump has been growing larger ever since it was noticed six months ago. Five weeks ago the lump was tapped, and she has had pain and has felt ill ever since. Ten days ago she had a bad attack of pain in the abdomen, with vomiting and shivering. Her previous health has always been good, and there is no family history of disease.

Present Condition (27th February 1894).—She is a healthy-looking person, with a convergent strabismus. The tongue is furred, the appetite good, and the bowels regular. She is troubled with frequent micturition. The various systems are normal. The urine contains a trace of albumen.

Local Examination.—On inspection the abdomen is rounded and prominent, about the size of a six months' pregnancy. On palpation there can be felt a rounded swelling like a six months' pregnant uterus, reaching from the pubis to the umbilicus, and slightly to the right of the middle line. On pressing sharply over the front of the tumour a sensation of *ballottement* is recognised, as if fluid were displaced from the front of a solid tumour. There is a feeling of indistinct fluctuation from the front of the abdomen to the flank. On percussion there is dullness in front over the tumour; resonance in the flanks on both sides.

P.V.—The posterior vaginal wall is prolapsed, forming a rectocele. Bi-manually the uterus can be distinctly felt, of normal size, lying to the left of and independent of the tumour.

Treatment: Ovariatomy, 2nd March 1894.—The abdomen was opened in the middle line by an incision extending from the umbilicus to the pubis. On opening the peritoneum about a gallon of clear glairy ovarian fluid escaped from the cavity of the abdomen. The tumour was found to consist of a number of small cysts, and was free from adhesions. The incision was prolonged to about 3 inches above the umbilicus, so as to turn out the tumour whole from the abdomen. The pedicle was transfixed and ligatured, and then divided. The left ovary was normal. There was intense congestion of the parietal and a large portion of the visceral peritoneum. The peritoneal cavity was sponged fairly dry, and then closed without any drainage. The abdominal wound was united by sutures of silk, transfixing all the layers.

Pathology.—The tumour was the size of a large football, and was composed of a large number of small cysts, none of them being larger than a walnut. On the front of the tumour was an open trocar hole of the size of a penholder, explaining the source of the free fluid in the abdominal cavity.

After-progress.—On the 13th March the wound was dressed for the first time since the operation, and was healed throughout. The stitches were removed. Her recovery was uneventful, and she went home on the 17th of March, fifteen days after the operation.

Remarks.—There are several points of interest in this case. Concerning (1) the diagnosis, it will be noted that (*a*) though a considerable quantity of free fluid was present in the abdomen, the flanks were resonant on percussion. I have not seen any notice of this sign, but have had several opportunities of verifying the observation that when a tumour and free fluid are present the flanks are resonant on percussion. Clearly the tumour lying in front of the intestines keeps them pressed back into the flanks. *Ballottement* is *the* sign of free fluid, with a tumour in the abdomen, and an ovarian tumour complicated in this way is usually malignant. (*b.*) The physical signs, judging from abdominal examination alone, were those of pregnancy. Bi-manual palpation of the uterus definitely decided against this possibility. *A distended bladder and a pregnant uterus should first be positively excluded in the diagnosis of any abdominal tumour.* (2.) The leaking of the cyst into the peritoneal cavity after tapping. This illustrates only one of the dangers of tapping an ovarian cyst, for I have seen tapping followed by suppuration of the cyst contents, and by free bleeding into the cyst cavity; and failure to relieve the pressure symptoms, from the thickness of the fluid contents, or the multilocular nature of the tumour, is not uncommon. If the risk of infecting the peritoneum, should the growth be malignant, be also remembered, along with the fact that even when most successful this operation can only be palliative, ovariotomy will entirely replace tapping. (3.) The fact that the abdomen was closed without drainage or flushing. Except in pus cases, I rarely drain or flush.

(*To be continued.*)

Part Second.

REVIEWS.

The Senile Heart: Its Symptoms, Sequelæ, and Treatment. By GEORGE WILLIAM BALFOUR, M.D. (St And.), LL.D. (Edin.), F.R.C.P.E., F.R.S.E. London: Adam & Charles Black: 1894.

USUALLY men and their opinions need much revision before errors are minimised or completely eliminated. Twenty years have elapsed since the author's classical work on *Diseases of the Heart* appeared, and now he offers to the profession for its acceptance and guidance a treatise on the same organ as affected by age. Coming from a master of the subject, and containing his matured experience, the book must, on that account alone, have an exceedingly high value; and when, moreover, the knowledge acquired by long practice and exact observation is presented to the reader clothed in sound and vigorous English, simple in style, frequently eloquent and at times pathetic, the mere perusal of such a literary production is no small gratification to the mind, and the critic, in such a presence, can really do nothing but acquiesce.

The motto on the title-page, "*Nascentes morimur,*" is the text which the author expounds, and the twelve chapters into which the book is divided follow each other in natural order, the antecedent one leading up to and preparing the ground for its successor. Each chapter has its argumentum or scheme printed on the margins of the pages,—an ancient and very convenient way of indicating at a glance the subject-matter of any paragraph, the series forming a running index for the chapter itself.

The first is introductory, and contrasts the characteristics of the circulation in early life with those of advancing and advanced years, and explains how and why man in old age shrivels up into his own mummy, and becomes the sarcophagus of his youthful prime.

The second chapter shows how the heart is affected by age; how capillary areas become sealed up; how arteries lose their elasticity, and how intra-vascular pressure is thereby increased, and larger demands are made for increasing energy of heart-contractions which must end in a hypertrophy, at first physiological, but by and by accompanied by dilatation; and that the heart muscle so, actually or relatively, weakened, is the essential lesion of a senile heart.

The three succeeding chapters deal with signs and symptoms, and fix the diagnostic and prognostic value of the irregularities of cardiac action known as palpitation, tremor cordis, tachycardia, bradycardia, and delirium cordis. The author discusses the powers of alcohol and abuse of tea and coffee and tobacco to cause heart-hurry, and mentions that he himself cannot distinguish with certainty over 150 pulsations per minute, and that, even with the aid of the sphygmograph, he has never found any pulse beating over 200. Several illustrative cases, occurring in the author's experience, are given; and he notices the fact that injuries of the spine in the cervical region slow the pulse, leaving it all the time full and large.

The sixth chapter is devoted to the consideration of angina pectoris, which, though usually senile, may yet occur in early life. There may be angina without pain, and many precordial pains are not anginous; such are those caused by torpid liver, intercostal myalgiæ and neuralgiæ, and sometimes the pressure-pain caused by some undetectable thoracic tumour; in this latter connexion we are warned against the danger of branding the feeling as something which ought to be struggled against. The common factor in almost every condition of heart with which angina has ever been found associated is an imperfect blood supply,—so says the author,—and the result is faulty metabolism and consequently a weakened heart. Interesting statistics are given of cases seen by the author at his own house during a period of ten years. Of 581 senile hearts, 98 made complaint of angina, and the subsequent history of several of those patients is related.

The chapters on concomitants and sequelæ of the senile heart are a most interesting portion of the book—gout, glycosuria, and cirrhotic kidney. We end-of-the-century folk are nearly all gouty, almost *ab ovo.* We get longitudinally and transversely striated nails, and the author considers that the former are marks of a gouty diathesis, but the latter rather indicate some serious illness over-lived, and gout is seldom so serious as to cause transverse furrowing. At page 178 he says that the thumb nail takes six months to shove forward from matrix to tip, but really the rate of growth is greatly modified, as might be expected, by one's age. The reviewer over-lived a very severe attack of typhus when aged 40; he noticed the furrowed nails, and found that in three months, on the fingers, the groove had travelled to the tips, and in six months the same had happened on the toes. It may also be mentioned here that keeping the hands aseptic by means of corrosive sublimate, in some people, causes furrowing and splitting of the nails. Heberden's knobs are distinctly connected with the gouty diathesis, Haygarth's nodosities are associated with rheumatoid arthritis, and the author does not seem to think even a considerable percentage of sugar in the urine of very great importance if the patient does not lose flesh. Now, this is doubtful; we have seen such a fat diabetic suddenly develop serious symptoms, carbuncles and gangrene commencing in a toe and invading the whole foot. In this chapter also the theories of Bright, Traube, Johnson, Gull and Sutton as to the relation of cirrhotic kidneys to hypertrophy of the left ventricle are examined and dismissed as inadequate, the author holding the opinion that senile loss of arterial elasticity is sufficient to account for, first the cardiac hypertrophy, and sequentially the cirrhotic kidney, and cases are brought forward which support this view.

The remaining chapters of the book discuss minutely the therapeutics of the senile heart; the causes of the cardiac malnutrition are to be found out and combated. Where compensation is good, moderate exercise may be allowed; where it is imperfect, rest is indicated. Temperance in all things, even more in eating than in drinking; and dietary tables are given and dietary rules which being followed can only result in good to the weak heart. Tobacco is condemned. Among drugs, digitalis is the best of all cardiac tonics, and Nativelle's granules contain it in a convenient and trustworthy form. Simultaneously with the digitalis, some of the nitrites or iodide of potassium should be exhibited, because they unlock the arterioles and lower blood-pressure. Nux vomica, arsenic, and iron are also useful in their own places, and flatulence may be dealt with by sp. ammon. aromat. and the time-honoured cobbler's pill. To relieve pain and procure sleep there is nothing equal to morphia, and it is wonderful how large doses (and for long years) are not merely tolerated, but prove beneficial. One case of aortic and mitral regurgitation and sleeplessness we can recall to mind, in which 16 and 17 drops of the hypodermic solution of the acetate of morphia, equal to 1½ grain of the acetate, were injected twice daily for more than a year before death, which was caused by double pneumonia. In this patient paraldehyde and chloralamid, two hypnotics mentioned by the author, were utterly useless, but theobromine always dispersed the œdema of the lower extremities which came on now and then.

The book is closed by a short and very wise chapter on the prognosis of special symptoms, and by a tabular recapitulation of treatment. A number of illustrations are introduced into the body of the text, all of which, while not essential, render its subject-matter clearer. The book is nicely printed and got up, and is very free from printer's errors, but "preventible" on page 213 and "preventative" on page 235 are not pleasing to the eye. As a whole, it is a most charming production, and recalls to memory the clinical lectures and essays of Sir James Paget.

The Physiology of the Carbohydrates: Their Application as Food, and Relation to Diabetes. By F. W. PAVY, M.D., LL.D., F.R.S., F.R.C.P. London: J. & A. Churchill: 1894.

ANY contribution to the subject of glycosuria from the pen of such an eminent authority on the subject as Dr Pavy is sure of a careful and attentive reading, while his latest book is the result of so much labour, and is of so far reaching a nature, that it will give rise to not a little controversy. This volume of 250 pages bears on every page evidences of hard, painstaking, and conscientious work. Dr Pavy has made great use throughout his experiments of the power of phenyl-hydrazin to form osazones with the different sugars,—such as, for instance, glucosazone from glucosi. He lays stress, also, on the different reducing power of other sugars as compared with glucose, a power which can be at once determined by estimation with the author's ammoniated solution of copper both before and after treatment of the liquid with sulphuric acid. The result of his numerous experiments is to show, in his opinion, that the commonly accepted views of the glycogenic function of the liver are erroneous. Instead of storing up glycogen derived from the sugar of the food in order to dispense it regularly to the system generally, re-converted into glucose, Dr Pavy is of opinion that the liver mainly prevents carbohydrate material entering the general circulation, some of it being changed into glycogen, some into proteid material, and some into fat, these actions taking place owing to protoplasmic action. In health the liver is able in this manner to free the blood of any excess of sugar. In disease it allows some or all of the carbohydrates to pass unchanged into the blood, and from thence into the kidney. But although the liver is able to change carbohydrates into proteid and fat, it is not in that organ alone that these changes occur; indeed, our author looks upon the intestinal villi as the chief situation in which fat may be produced from carbohydrate material. He bases this opinion on observations made on the villi of rabbits fed solely on oats. The villi, on treatment with osmic acid, appear to be loaded with fat globules. We say nothing further on this deduction than to hint that it is just possible that fat is not the only body stained by the reagent used. The change of carbohydrate into proteid matter he regards as occurring from protoplasmic action in different tissues. His final conclusion reads thus:—"By protoplasmic action carbohydrate matter, as observation teaches us, is disposed of in a certain manner. If not disposed of in this manner, it escapes frem the system as useless material, producing the condition belonging to diabetes."

That Dr Pavy has honestly worked at this question and produced a book of great value cannot be doubted. That his conclusions will be accepted by the younger school of physiological chemists, in the light of recent researches, is open to question. His volume will be eagerly read as the latest contribution to the very vexed question of liver glycogenesis and diabetes mellitus.

L'Éther comme Anesthésique de Choix et son meilleur mode d'administration masque pliant. Par le Dr V. CHALOT. Paris: 1894.

IN the May number of the *Revue de Chirurgie* an interesting article on ether as the anæsthetic of choice, and its better method of administration, by the pen of Dr V. Chalot, Professor of Clinical Surgery at Toulouse, occupies the first place. M. Chalot for twenty years employed, in common with his colleagues, chloroform for purposes of anæsthesia; but as from time to time grave accidents gave rise to great anxiety, although not causing the death of the patient, he determined to give ether a trial. He commenced the use of ether in 1892, and the above paper is the result of two years' experience with that drug. He has now adopted it as the routine anæsthetic, reserving chloroform for special cases. As a result of this experience he says, "Je désire ardemment dans l'intérêt des malades et des confrères que ma conversion fasse à son tour de nombreux prosélytes."

Dr Chalot discusses a series of questions regarding ether, after relating what determined him to adopt it. Many of these are very important, and all are considered in an impartial and fair manner, although naturally he supports the thesis that ether is better as a routine anæsthetic than chloroform, and relatively unfavourably criticises the latter.

In regard to the *primary safety* of ether, *i.e.*, during administration, he says statistics prove it to be indubitably superior to chloroform, and adds that the surgeon during chloroform anæsthesia is constantly apprehensive of the danger attaching to it, and accordingly does not, indeed cannot, operate so skilfully as with ether, when there is no such dread. We believe that if the idea of ether safety is countenanced it will lead to a false sense of security, and deaths will soon follow during its administration. Dr Hewitt says the great difference between chloroform and ether anæsthesia is the *broader margin* between safety and danger in the latter. This margin may be overstepped, and has been.

Some authorities have insisted that ether has secondary dangers, but Chalot thinks that these have been exaggerated. In health he believes there is no danger of bronchitis or nephritis, but if the lungs are diseased he admits it is undeniable that the condition is aggravated by ether inhalation, while this is not so with chloroform. Hitherto it has been more or less generally accepted that ether has disadvantages as compared with chloroform, but M. Chalot denies that this is so in any great degree. After enumeration of various disadvantages which are commonly advanced (strong odour, volatility, inflammability, slowness of action, great excitant, does not completely narcotize, large amount used), he shows how they do not really exist, or can be obviated; and that others (vomiting, lowering of temperature, coughing, cyanosis, salivation, trembling) are produced, although not so markedly, by chloroform as well as by ether.

Next we have the subject of "Indications et contre-indications de l'éther" considered. "Je donne l'éther à tous les âges et chez tous les malades," except when—(1), Acute inflammation of any part of the respiratory apparatus, including pleurisy; (2), chronic affections of lungs and bronchi; (3), presence of goitre; (4), cerebral surgery; (5), operations on face and neck; (6), when the thermo-cautery is to be used near the face; (7), when the trachea tampon of Trendelenburg is used; and (8), when necessary to operate in close, low, badly-ventilated, badly-lighted places.

Surely in the above we have a very extensive list, and a series of conditions in which, with the exception of (4) and (6), the use of any anæsthetic may give cause for anxiety. We always feel that in a consideration of the relative safety of chloroform and ether, it is hard on the former that so many of the more serious affections should be operated upon with it as the anæsthetic, while ether is left for less serious maladies. We believe the truth clinically will be better appreciated when the two schools—the etherists and chloroformists—unite to use both drugs, choosing suitable cases for each, and refrain from laying down any hard and fast rules for their employment. Is it to be wondered at if chloroform be used in such conditions as that stated under the 8th head (while ether is avoided), that more deaths should occur with chloroform than ether, quite apart from faulty administration on the part of the anæsthetist?

The latter part of this paper is occupied by a description of the author's mode of administration. The apparatus he recommends is a modification of Juillard's, which is similar to that known elsewhere as Skinner's cap. The covering, however, is fixed in position by a movable ring, and an impermeable material is placed externally to prevent the ether vapour from escaping too rapidly.

Further, the ether is given in large quantity. The method is practically a "*close*" method, but by a much more convenient apparatus than Clover's. This part of the paper is particularly well written, and we think the method admirable. If a more extended trial proves satisfactory, we believe that to a great extent the method will do away with almost insurmountable difficulties to the use of ether by country practitioners. The paper is of high value, reflects much credit on its author, and well repays a careful perusal.

Paludism. By Dr A. LAVERAN. Translated by J. W. MARTIN, M.D. London: The New Sydenham Society: 1893.

IT is quite time that a translation of Professor Laveran's work should appear, and the New Sydenham Society has rendered a distinct service in producing it. So much difference of opinion obtains, especially in India, as to the cause of malaria, that an authoritative statement by the discoverer of the malarial hæmatozoon became highly necessary. The upholders of the "chill" theory, the "electrical condition of the atmosphere" theory, and others, will find that they have a hard nut to crack would they explain away or belittle the work before us.

Laveran describes at length the malarial hæmatozoon in all its phases. He details the method of examining the blood for the micro-organism, he compares the organism found in malarial blood with similar organisms found in birds, and he gives a masterly *résumé* of the treatment of malaria. Apart from this, he gives the details of the observations he has made, and furnishes a bibliography of the works relating to paludism which have appeared in recent years, as well as those concerning sporozoa in general. The work is admirably produced and illustrated, and Dr Martin has done his work satisfactorily. We strongly commend the careful perusal of this volume to all medical men practising in malarial regions.

Myxœdema, Cretinism, and the Goitres. By E. J. BLAKE, M.D. Bristol: Wright & Co.: 1894.

THE author of this small work seeks to prove that Graves' disease in woman is an autotoxis, most frequently caused by the absorption of purulent products; the same leading to rheumatism in males, by acting on the medulla oblongata. If these products abolish the functions of the thyroid, we may get myxœdema. If they invade the cortex abruptly—a psychosis, *e.g.*, mania or some neurosis, *e.g.*, epilepsy; if gradually and the poison is diluted—chorea. On these lines the campaign against the diseases must be carried on. The book is original and well worth some attention.

On the Use of Opium in India. London: Smith, Elder, & Co.: 1894.

REPRINTED from the pages of the *British Medical Journal*, this work—a summary of Reports to the Bills Committee of the British Medical Association received from medical officers and civilians resident in various parts of India—will be already familiar to our readers. The publication in book form of this valuable summary, as prepared by Mr Ernest Hart, D.C.L., will prove very welcome to the many interested in the opium question, and the conclusions arrived at after careful and exhaustive inquiry, and so eloquently expressed in the text, should do much to subdue the fanatics and faddists who have of late been making themselves so ridiculous on this subject.

The Retrospect of Medicine. Edited by JAMES BRAITHWAITE, M.D. London: Simpkin, Marshall, Hamilton, Kent, & Co.: 1894.

THIS useful *Retrospect* still holds its own, and ought to be in the hands of every medical man. The selections are admirable, and so far as one can see nothing of real importance is omitted.

On Preservation of Health in India. By Sir J. FAYRER, K.C.S.I. London: Macmillan & Co.: 1894.

THIS little book is a reprint of a lecture given to the students of the Cooper's Hill College. It is useful and wise, but might, we think, have been somewhat extended with advantage. A good book of the kind is sadly needed, and no one could produce it better than the distinguished author of this brief sketch.

The Sanitary Code of the Pentateuch. By the Rev. C. G. K. GILLESPIE. London: The Religious Tract Society: 1894.

THIS is a capital investigation of the Mosaic code. It sets forth with clearness the reasons for the rules laid down by the great lawgiver, and shows how the code coincides with modern science. There is much out-of-the-way information given, and we can cordially commend the book.

Alpine Climates for Consumption. By H. T. HARDWICK, M.D., etc. London: J. & A. Churchill: 1894.

THIS is a reprint from an article published in the *Lancet*. It is correct, but adds nothing to our knowledge of Davos. It seems intended for popular use, but should consumptive patients select heir own health resorts?

The Nurseries of Cholera: Its Diffusion and Extinction. By ERNEST HART, D.C.L. London: Smith, Elder, & Co: 1894.

REPRINTED from the pages of the *British Medical Journal*, and published in book form, the address of Mr Hart on this subject, as delivered before the British Medical Association, should prove welcome and valuable in the hands of medical men.

The Relation between Malarial Fever among White Troops at Port Louis, Mauritius, and the Meteorological Elements of Temperature, Rainfall, and Relative Humidity for the Year 1894. By H. H. JOHNSTON, M.D., D.Sc., Surgeon-Major A.M.S. Edin.: 1894.

IN pamphlet form, Surgeon-Major Johnston publishes a report on the relations between malaria and the meteorological elements. The report is exhaustive, and contains much of interest to those concerned in malarial affections.

Budapest Souvenir. Dedicated by the Direction of the Franz Josef Aperient Water Spring in Budapest to the Members of the Eighth International Congress of Hygiene and Demography at Budapest. 1894.

THE directors of the Franz Josef spring have produced a splendid book of views of Budapest. Interest is added by the autographs of many distinguished Continental physicians.

Any one wishing a copy may apply to Messrs Burroughs, Wellcome, & Co., London, who have a hundred copies for distribution. Those who have not been to Budapest should apply for a copy.

The Bristol Medico-Chirurgical Journal, September 1894.
Bristol: J. W. Arrowsmith.

THIS is an admirable number of the well-conducted and interesting quarterly which represents the Bristol Medico-Chirurgical Society, and records much of the first-rate work in all the branches of medicine and surgery which is being done in the west of England. The chief feature of the number is a well-written and interesting record of the late meeting of the British Medical Association at Bristol. A historical sketch of the Association is given, and the two earlier meetings at Bristol in 1833 and 1863 briefly described, and the progress made in each generation well emphasized.

Then the 1894 meeting is described and the work criticised with a vigour, honesty, and plain speaking worthy of all praise. As a rule, such descriptions seem the minutes of a mutual admiration society, and are as valueless as they are mawkish. This paper is of quite a different kidney, and those of us who were not there have the feeling that we are told really what happened, not what should have happened. It is pleasant to find that this outspoken critic knows how to praise, and one or two of his kind words may be quoted—"The surgical section was presided over in a very able manner by Mr Mitchell Banks, who in a characteristically gentle and genial manner summed up the opposing views at the end of the various discussions and papers. The Presidential duties were performed with much perspicuity and tact."

Of our colleague Dr M'Bride we are told that in the section of Otology and Laryngology "the authorities could not have made a happier selection than Dr M'Bride, who is an old Cliftonian. In the conduct of the work of the section he added great firmness to unvarying courtesy, and thus kept the unruly elements within due bounds." Dr Carmichael of Edinburgh had the honour of opening a discussion on the Treatment and Complications of Whooping-cough. Mr Greig Smith's splendid surgical work seems to have excited much admiration in those who visited his wards; and at the Medical Missions breakfast Dr E. Neve of Kashmir and Dr Thompson of Hong-Kong had deeply impressed their auditors. Dr Neve's work and that of his brother are well known to readers of this Journal, to which he contributes so often.

We must finish this notice by a story of an eminent *savant* who in his general appearance rather affects the "trick of singularity." He found that in part of the time he was in charge of the bacteriological department the place was rather hot. He accordingly removed his coat and regaled himself with a cigar. A lady doctor who came into the Museum at the time said to him, "You don't look much like a medical man." To which he replied, "Neither do you"!!! (p. 206).

The British Guiana Medical Annual and Hospital Reports. Demerara: Balwin & Co.: 1894.

DRS WALLBRIDGE AND ROWLAND, the editors of this *Annual*, are to be congratulated upon this work. We have previously favourably noticed this colonial production, and the number before us upholds the good traditions of the past five years. Dr Daniel's paper on the post-mortems made at George Town is very well worth perusal, as is also the paper by Dr Neal on the statistics of the British Guiana Leper Asylum, which should be studied by all interested in leprosy. The same author writes on Surgery in Leprosy, and shows that the blood very rapidly coagulates, and also that the tissues heal very rapidly, perhaps due to the coagulation of the blood. Anyway, it is a remarkable contrast to the healing powers in other exhausting diseases,—*e.g.*, tuberculosis, in which healing is usually tedious.

Journal of the Scottish Meteorological Society. No. X.

THE outstanding features of this well-known journal are Dr Buchan's most valuable contribution, "The Monthly and Annual

Rainfall of Scotland, 1866-1890," well illustrated by thirteen maps, and Mr Mossman's careful account of "The Climate of Braemar."

The maps render Dr Buchan's paper at once comprehensible to the reader, and many useful lessons are learned by a mere glance at them. The rainfall varies from under 30 inches on the east coast to over 80 on the west. The monthly distribution of rainfall is of interest. Nairn and the vicinity is the driest area in Scotland. Most rain falls at Ardlui, at the head of Loch Lomond (115·45 inches), at Bridge of Orchy (118·35 inches), and at Glencoe (127·65 inches). We regret that we have not space to notice the other articles.

In the September number of the *Medical Chronicle* there is a short paper by Mr F. A. Southam "On the Traumatic Origin of Loose Bodies in the Knee Joint." He records three interesting cases of this kind. In the first, the loose body which was removed had evidently been a pedunculated body growing from the synovial membrane, and had gradually become detached; symptoms of derangement had followed a severe wrench of the knee. In the second case the loose body was a piece of articular cartilage and bone from the end of the femur, detached some weeks previously by a blow against the edge of a bench, received upon the outer side of the knee. In the last case the right external semilunar cartilage was found completely separated in front and laterally from its attachment to the tibia, and owing to a transverse rupture behind this loose portion, it was connected to the rest of the cartilage merely by a thin band of fibrous tissue.

These cases form a valuable addition to the literature of this subject, as every carefully reported case helps to complete our knowledge of internal derangement of the knee. It is to be regretted that no microscopic examination has been furnished of the bodies removed in the first two cases; for notwithstanding a definite history of an injury in both of them, the presence of disease is not excluded in either. The question of detachment of a piece of articular cartilage and bone in a healthy joint has been the subject of considerable dispute. Sir George Humphry, who strongly opposed such an origin of loose bodies, is now less sceptical than he was, and readily admits that such may occur. The case here described by Mr Southam is evidently another of the kind, and must be added to the short list of those already recorded.

A loose body consisting of a piece of semilunar cartilage is a very rare condition. Neither in Mr Southam's nor in Mr Brodhurst's published case was the portion of cartilage completely free. We have only been able to find one case definitely stated to be a complete loose body from this source, and that is described by Dr Mixter of Boston in the *Transactions of the American Surgical Association* for 1893.

IN the *Kölnische Zeitung*, 25th August 1894, there is an article of rather unusual interest, namely, on "The Duty of submitting to Operation on the part of those Insured against Accident." As is well-known, or, perhaps, as should be well-known, there is in Germany a system of national insurance, and the question raised is this—If a man meet with an accident, and an operation is advised, is the man at liberty to refuse it and still be permitted to benefit from the insurance fund? In regard to this point law and medicine are not agreed. The liberty of the subject is in question, and there are many points of delicacy to be settled. It might be well for some of our medical jurists to consider this question, as the adoption of some scheme of national insurance is not very far distant in our own land.

IN the *Nordiskt Medicinskt Arkiv*, No. 3, 1894, is an article by Dr Edward Wander on Gonorrhœa, which is worthy of consideration. He wishes to show that, apart from the local manifestations of the disease, there is a general infection. The cases which he quotes seem to prove it.

THE *Sei-i-kwai Medical Journal*, published monthly at Tōkyō, Japan, really merits consideration from us. The articles are very well written, brief,—briefer than many sent to us,—and therefore do not lose their weight: "cut it down" seems to have been taken to heart by the writers in Japan. "Nursery Notes" by Dr Ashmead in the June number is well worth reading. No kissing in Japan can convey infection! The papers by Dr Ashmead on "Some Foreign Opinions on Pathological Matters peculiar to Japan," are very valuable and to the point.

THE *Australasian Medical Journal* for June contains an interesting contribution on "Spider Bites" from the pen of Dr Parry. In the same number we note the Annual Report of Dr Manning, Inspector-General of the Insane, which shows an increase in the number of insane patients under treatment in the various hospitals in New South Wales. The July number contains an article on the "Physiological Action of Snake Venom, with a Reference to the Treatment of Snake Bites," which is contributed by Dr Bancroft with a view to promoting discussion on the subject.

THE July number of the *Montreal Medical Journal* contains many articles of interest. Dr E. C. Mann writes with ability and originality on the treatment of the "Morphia Habit," whilst Dr Evans contributes an interesting article on "Appendicitis."

THE *American Practitioner and News*, dated July 28, among other original contributions, contains a paper by Dr Greenley, treating of "Longevity of Man."

A review of Dr John Wyllie's great work on "The Disorders of Speech" is unavoidably postponed till next month's issue.

Part Third.

MEETINGS OF SOCIETIES.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LVI.—MEETING I.

Wednesday, 14*th November* 1894.—Dr A. H. FREELAND BARBOUR, *President, in the Chair.*

I. The following gentlemen were elected ordinary members of the Society:—Thomas Easton, M.A., M.D., Hanover House, Stranraer; D. Robertson Dobie, M.D., 13 High Street, Coldstream.

II. *Dr J. A. C. Kynoch* exhibited FŒTUS WITH UMBILICAL CORD COILED SIX TIMES ROUND THE NECK. The mother was a primipara, æt. 28, who supposed herself full time, but date of last menstruation was uncertain. Fœtal movements ceased three weeks before the onset of labour, and there was no history of excessive movements at any time. On examination there were no fœtal heart-sounds to be heard; a good deal of abdominal tenderness, especially over the left side; pains excessively strong. Vertex presentation; membranes ruptured. Fœtus and placenta were expelled together, and beyond slight post-partum hæmorrhage, due to traction on the placenta by the relatively short cord, there was nothing unusual to be noted. Duration of labour, fifteen hours. The cord, 34 inches long, is firmly coiled six times round the neck. The specimen is of interest on account of this unusual coiling, in the absence of the usual predisposing factors, viz., small child, great length of cord, and excess of liquor amnii.

III. *Dr A. H. F. Barbour* delivered his Presidential Address, entitled SOME ASPECTS OF HEREDITY, and on the motion of Prof. Simpson, seconded by Dr Hart, was awarded a cordial vote of thanks.

IV. *Dr Ramsay Smith* communicated a NOTE ON A CASE OF LABOUR WITH RENAL AND CARDIAC COMPLICATIONS, which was read by *Dr J. W. Ballantyne*, and will appear in a future number of this Journal.

ROYAL MEDICAL SOCIETY.

October 26.

THE 158th session of the Royal Medical Society was opened by the delivery of the usual Inaugural Address. The fact that Sir W. H. Broadbent, Bart., had been announced to deliver it was the means of attracting a large audience, among whom were Profs. Sir Wm. Turner, Sir Thos. Grainger Stewart, Simpson, Fraser, Rutherford, and many other well-known medical men. Dr Hutchison, as Senior President, occupied the chair, and formally introduced Sir Wm. Broadbent.

The subject of the address might be described as the application of scientific method to the study and practice of medicine. He dwelt on the importance of introducing as much exact science as possible into a subject still so largely empirical as medicine, especially the importance of chemistry. He also urged the need of keenness of observation, together with careful discrimination and selection of relevant facts and sound inference therefrom. While advocating the advantage of forming a vivid clinical picture of a case, he expressed the opinion that actual error was preferable to muddle-headedness. He proceeded to treat of various diagnostic points, emphasizing especially the fixity of the diaphragm in abdominal inflammation, with consequent see-saw movement of chest and abdomen in respiration. Finally, he entered in some detail into the consideration of the pulse, a subject which he has made his own.

A vote of thanks was proposed by *Dr Hutchison*, and seconded by *Sir Thos. Grainger Stewart*.

Dr Hutchison seized the opportunity of urging on all medical students who were not already members of the Society the importance of joining it.

November 2.

Mr D. M. Hutton gave a communication on the Treatment of a Case of Cystitis. He pointed out the danger of over-distention or even rupture of a bladder which is being washed out with douche can and head of water. Experiments performed by him on a sheep's bladder showed that they were distended to transparency with head of 3 feet, and burst with head of 5 feet.

A discussion followed on the method of injection of iodoform after washing out bladder.

Dr Fred. Mackay gave a communication on Typhoid Fever, and showed pathological specimens. Two other communications were also given, one by *Mr Bowes* on a case of Athrepsia, the other by *Dr Rainy* on a case of Leucocythæmia, with microscopical specimens.

November 9.

Dr John Orr, as Senior President, delivered his address. He purposed, he said, to deal with three questions, which he regarded as of immediate practical importance, viz., State endowment of medical research, State regulation of vice, and the compulsory detention of confirmed inebriates. With regard to the first point, he said it was humiliating that we should have to send our cases of hydrophobia all the way to Paris; but it was only a typical result of the general backward condition of this country, as compared with our Continental neighbours, in the matter of the endowment of medical research. He maintained that it was the duty of the

State to remedy this defect, and alluded, in passing, to the foolish carpings of anti-vivisectionists. With regard to the second question, he held that the State ought to take steps to prevent the spread of venereal disease, and recommended a rigorous system of medical supervision and inspection of both sexes as a feasible method of coping with the evil. Treating, finally, of the subject of confirmed alcoholism, he held that the present law, under which the drunkard could not be detained without his own consent, was quite inadequate, and that more power ought to be given to relatives to procure the detention of such inebriates as were incapable of performing the ordinary duties of life.

The address was well received.

Dr Fred. Mackay, in proposing a vote of thanks, complimented Dr Orr on the tone of conviction that characterised his address. It was, he said, gratifying to observe that the municipality of Edinburgh had lately made a grant in aid of scientific research into the antitoxin treatment of diphtheria.

Mr A. R. Wilson seconded, and remarked that although they might not all agree with Dr Orr in some of his opinions, they could not but admire his courage in expressing them so frankly.

Dr E. F. Neve, surgeon to the Kashmir Medical Mission Hospital, then read a communication on the Operative Treatment of Vesical Calculus, describing, in a lucid manner, a considerable number of cases in which litholapaxy, Boutonnière's operation, or lithotomy, had been performed by himself or by his brother. He deprecated what he called the Procrustean method of applying one particular operation to many varied cases, holding that there was need of greater care in ascertaining what operation is really suitable. He considered litholapaxy dangerous in cases of large stone or renal disease. Perineal lithotrity was better, being more rapid and allowing use of larger lithotrite. He crushed in this way through the perineum a stone as large as a cricket ball. Risk of hæmorrhage in this operation was less than in lithotomy, and risk of subsequent impotence avoided. Even lithotrity might be useless in cases of encysted or adherent stone, in which case lateral or suprapubic lithotomy would be required. He had twenty-six cases of lateral lithotomy, of which three died,—causes of death being kidney disease, shock, and peritonitis respectively. The worst cases required suprapubic lithotomy. Marked success was obtained with it in children. Up to 1891 the average weight of stones extracted by him was 2 oz. 1 dr., chiefly uric acid, but mixed phosphatic were also common. One stone weighed over 7 oz., three between 4½ and 5. Interesting specimens of calculi were shown.

A discussion followed, in which Drs Elder, Easterbrook, Orr, Mr Wilson, Drs Mackay, Purves-Stewart, and Balfour took part.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Dr Robert Barnes, Honorary President, was entertained to dinner by the Society on the evening of November 2nd, and afterwards gave an address.

After thanking the Society for the honour conferred upon him, he made a few remarks on the Unity of Medicine. He showed how general and special medical science had suffered from the vicious sub-division of medicine into sections represented by special colleges and societies constituted and acting, to the neglect of Obstetrics and Gynæcology. In the Metropolitan hospital schools the position of the obstetric and gynæcological surgeon was formerly one of toleration rather than one of inherent right. A better spirit was now beginning to prevail.

He then took up the subject proper of his address on General Physiology and Pathology, illustrated by the study of menstruation and gestation. He said that two leading forces were produced by gestation. The first was the starting of exalted nervous and vascular tension, attended by certain changes in the blood. A rapid development of tissue and a general increase of glandular energy was witnessed. The second, viz., that of absorption and lactation, comes into play at the ending of gestation. He then took up hæmorrhage during labour and the subsequent lochial discharges. Those discharges were strictly physiological, and worked the first steps in the restoration of the single circulation which followed the casting off of the embryo. The excess of the circulating blood was thus got rid of, but if the loss exceeded the physiological need, the force of absorption was accentuated. A vacuum force was thus added which favoured the sucking in of any fluid from the genital and intestinal canals, and of any aërial matter existing in or brought to the lungs. This was the principal factor in producing puerperal septicæmia. The two before-mentioned forces tried the integrity of all the tissues, and revealed any defects in them. He dwelt upon the opportunities for physiological observations which would be afforded by experiments upon animals during gestation. A marvellous transformation was wrought in every part of the organism. Every part felt the new impulse. Every function was doubled. In healthy gestation an exact equilibrium was maintained between the wants of the two organisms, but at times the maternal organs were over-taxed, physiological action passed into pathological processes, and changes in structure took place, the predominant force of the circulation being constructive excentric disposed to exudation and hæmorrhage. Increased secretion of urine, saliva, and other mucous discharges moderated the vascular tension; but if these failed to maintain the equilibrium, serous effusions into the cavities, the cellular tissue, and even the parenchyma of organs, or external hæmorrhages from nose, lungs, stomach, or intestines, took place, and abortions might thus be averted. When abortion did occur it might be regarded as a conservative event. When these safety routes failed, internal hæmorrhage—*e.g.*, into the brain—might occur. This clearly taught us to relieve physiological plethora either by venesection or by terminating the pregnancy.

He next drew attention to the fact that the mucous membrane of the vagina and rectum showed deep congestive desquamation which corresponded with the deepened areola and the secretion of milk. He might fairly conclude that similar conditions existed in the mucous membrane beyond our sight. It was certainly true of the kidneys, as epithelial scales were frequently, and albumin occasionally, found in the urine, without any organic changes in the kidneys. This was due to high arterial tension, which if too long sustained or too frequently repeated, caused persistent albuminuria and change of tissue. Jaundice and diabetes arose and disappeared with pregnancy, which showed they were not due to organic changes. Temporary diabetes had been called physiological glycosuria. It had long been known to students of the phenomena of pregnancy. He himself had known several women who had had diabetes in every pregnancy, and only then. This illustrated the trial of the system of high tension, and the disturbance of the balance between secreting and excreting organs. Albuminuria, jaundice, etc., had too often been put down as due to inflammation.

He next took up physiological plethora. The blood increased in volume, and was more coagulable from increase of fibrin. The heart was hypertrophied, and probably the nervous centres were coincidentally hypertrophied, although this had not yet been proved. From this history of physiological plethora and growth the evolution of tumours might be traced, as well as organic hypertrophy of the heart, and some cases of valvular disease and phlebectasis. The organic or constructive stage pertained to gestation. The transition to the pathological stage mostly set in in the post-puerperal period. Owing to some constitutional fault, or to causes interrupting the due course of involution, the redundant tissue remained and formed the basis of hyperplasia, hypertrophy, or tumour.

In the glandular phenomena he instanced the normal swelling of the thyroid in young married women as a proof that goitre is essentially a result of high arterial tension. Might pigmentation of the abdomen and face be due to increased activity of the suprarenal capsules?

The study of the nervous phenomena of pregnancy went far to elucidate some forms of nervous disease unconnected with pregnancy. In his Lumleian lectures he had emphasized the fact that these affections might long lie dormant unless evoked by some incidental cause. Menstruation and pregnancy yielded many instructive examples of this. Chorea, apparently cured in infancy was apt to recur when menstruation and pregnancy set in. Hysteria and insanity, which had long resisted general treatment, were often relieved when the provoking disorders of the genital organs were removed. These cases were frequently seen at the climacteric period.

He dealt very fully with the second great force evoked after gestation was accomplished. There was a sudden fall of tension,—a substitution of absorption for construction. The tide turned from the periphery to the centre, and a new seat of activity was developed —the secretion of milk. The effete tissues were thus got rid of. When lactation was hindered the organs lost their proper mode of relief; the process of fatty metamorphosis was interfered with, involution was hindered, and physiological hypertrophy passed into pathological hyperplasia. In this way we might trace the origin of tumours of the homologous type. Fatty metamorphosis and elimination gave way to fatty degenerations. This was the history of many cases of fatty heart, fatty liver, and Bright's disease. Enlarged heart was apt to persist when lactation had been interrupted. In 1851 he had described fatty and calcareous degeneration of the placenta. In pregnancy calcareous deposits were found in the cranium as well as in the placenta. These were probably parts of the ossific material prepared for the building up of the fœtal skeleton.

He then touched upon the therapeutical application of forces of gestation. He pointed out that atrophy was apt to occur when the processes of absorption were carried to excess.

Gestation and menstruation, regarded as a natural experiment, throw the clearest light upon the origin, essence, and treatment of many diseases. The study of pregnancy and puerpery brought before the observer the most striking example of the working of the great forces, etc., etc.

He concluded by summing up the main points set forth :—1. The working of the great forces of exalted nervous and vascular tension in the production of new tissue; 2, of the converse force of active absorption; 3, of the influence of hæmorrhage; 4, that of blood changes and metabolism.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By **William Craig**, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

The Antitoxin Treatment of Diphtheria.—Schippers (*Weekblad van het Nederlandsch Tijdschrift voor Geneeskunde,* Oct. 27th) records a case of acute diphtheria cured by a single injection of Behring's serum No. 2. The patient was a boy aged 5 years, and the symptoms were very severe. The tonsils, the uvula, and the entire surface of the posterior wall of the pharynx were covered with membranes. The voice was entirely lost. Stridor was so loud that it could be heard outside the front door. The lungs were unaffected. Temperature 100° F., the pulse full, somewhat accelerated. An operation seemed to be the last resource, but as the author a few days before had obtained from Berlin a single dose of serum, the injection was decided upon, although the case seemed hopeless for the experiment. The serum was injected in the right hypochondrium. The treatment which was being pursued before the injection (quinine and sesquichloride of iron, the application of ice and inhalation of steam) was continued. The following morning a decided improvement was observable. The false membranes had nearly entirely disappeared. The voice was still hoarse, but the stridor was greatly diminished. By the third day after the injection the alarming symptoms had entirely subsided, the temperature was normal, and the appetite had returned. In the case of another child of the same family, for whom no serum was available at the date of the report, the membranes were extending with alarming rapidity over all the organs of respiration.—*British Medical Journal*, Nov. 10th, 1894.

THE TREATMENT OF GOITRE BY THYROID FEEDING.—P. Bruns (*Deut. med. Woch.*, Oct. 1894) has tried thyroid feeding in cases of goitre, especially in young people. Cystic goitre, of course, is not amenable to this treatment. Of twelve cases goitre disappeared either entirely, or in great measure in nine. In four cases completely cured the thyrod was enlarged in all its parts, the one half being about the size of a hen's egg. In one case there was stridor with difficulty in breathing, which also disappeared. In a boy aged 14, a goitre as big as the fist diminished in four weeks, so that the circumference of the neck became less by 7 cm. In a man aged 40, a right-sided goitre of about the same size and present for six years, caused displacement of the trachea and increasing difficulty of breathing. It disappeared after four weeks' treatment. In three patients, aged 23 to 57 years, the results were negative. The treatment lasted six days in one case and fourteen days in the other two. Strumectomy showed in one case a hyperplastic goitre with small cysts, and in another abundant colloid material. In only one case did the treatment give rise to unpleasant symptoms, namely, headache, anorexia, frequency of pulse, and loss of weight. This occurred after 46 g. were taken, distributed over fourteen days. The author concludes that thyroid feeding exercises a specific effect on many goitres, causing their rapid diminution or disappearance. He refers to Reinhold's cases (*Epitome*, August 13th, 1894, par. 157). The number are still much too small to admit of conclusions, but it is desirable to know what kinds of goitre can be thus treated. Provisionally it would appear to be relatively recent non-cystic goitre, especially if occurring in young people.—*British Medical Journal*, Nov. 3rd, 1894.

LYSIDIN.—Granitz, of Gerhardt's Clinic (*Deut. med. Woch.*, Oct. 1st, 1894), has used this remedy in gout. It has a much more powerful solvent action on uric acid than piperazin. He records two cases of characteristic gout in which lysidin gave the best results. The drug was given in doses varying from 1 g. to 5 g. in the day, with occasional intermissions. An elaborate investigation was made at the same time into the metabolism in these cases, the intake and the output being carefully estimated. It was found that there was no increase in the excretion of uric acid. In the first case the drug was omitted for some days and the pains returned, but the patient rapidly improved again as soon as the lysidin was resumed. In the second case tophi were seen to disappear under the treatment. In a case of genuine rheumatism the drug was without effect.—*British Medical Journal*, Nov. 10th, 1894.

COCAINE AS A MEANS OF STOPPING THE SECRETION OF MILK.—E. Casoli (*Gazetta degli Ospedali*, Sept. 20th) reports a further case illustrating the use of cocaine as a means of stopping the secretion of milk. A woman whose child had died immediately after birth was troubled by very profuse secretion of milk on the third day. A 5 per cent. solution of hydrochlorate of cocaine in a fluid composed of equal parts of water and glycerine was painted twice over both breasts on the fourth day. On the fifth the secretion was markedly diminished. On the sixth, after a few more applications of the same solution, the secretion entirely ceased.—*British Medical Journal*, Oct. 27th, 1894.

PICRATE OF AMMONIUM IN MALARIA.—S. P. Popoff, of Verniji, Siberia (*Proceedings of the Omsk Medical Society*, 1894, No. 5), warmly recommends picrate of ammonium internally in intermittent fever. He tried the remedy (dose not stated) in forty-two successive cases (mostly of quotidian fever). Of the number thirty-seven were recent, and all ended in recovery, the paroxysms ceasing, on an average, in four days. Of the five inveterate cases, two were also cured, but in three the remedy failed. In five other cases antipyrin, and in six methylene blue were tried, the results being disappointing (four and five failures respectively).—*British Medical Journal*, Oct. 27th, 1894.

LACTOPHENIN.—Roth (*Wien. klin. Woch.*, Sept. 13th, 1894) discusses the use of this drug (see *Epitome*, Feb. 17th, 1894, par. 139) in acute rheumatism. It has hitherto been chiefly used as an antipyretic, hypnotic, and antineuralgic. The author draws attention to the occasional failure of the salicylates in acute rheumatism, and to dangers at times attending the use of antipyrin, antifebrin, and even sulphonal. He has noticed after lactophenin a temporary feeling of weight and heat in the epigastrium, which has disappeared on further use. Occasionally there has been some cyanosis, but without other symptoms. The dose given has been from 5 g. to 1 g., and this may be increased up to 6 g. in the day. He refers to the use of this drug in enteric fever by von Jaksch (*Epitome*, April 28th, 1894, par. 347). Lactophenin has also been used in pneumonia, influenza, erysipelas, acute febrile tuberculous affections, scarlatina, sepsis, and acute and chronic rheumatism, but the number of cases of acute rheumatism is small. The author gives details of eight cases of this disease, and refers to twenty more in which he has used lactophenin with good results. He concludes (1) that the pain and swelling disappear generally within twenty-four to forty-eight hours; (2) that the temperature continues low; and (3) that no unpleasant by-effects were observed notwithstanding large doses. He has also found lactophenin useful in some cases of cholera, and in the pains of locomotor ataxy lactophenin is worthy of being placed along with the salicylates as an antirheumatic.—*British Medical Journal*, Oct. 20th, 1894.

MENTHOL IN DIPHTHERIA.—F. Kastorsky (*Vratch*, No. 24, 1894) reports thirty-seven cases of diphtheria (in three adults and thirty-four children) treated and cured by painting with a 10 per cent. alcoholic solution of menthol. The paintings (by means of a piece of cotton wool) were usually carried out three times daily. In some cases, however, a single free application was followed by complete disappearance of false membranes within two days. A marked improvement in the patient's general condition was invariably noticed from the beginning of the treatment. The same simple method was successfully practised by the author in numerous cases of anginas of various forms, and by Trütovsky in a group of cases of scarlatinal diphtheria. The paintings are said to be painless and quite harmless.—*British Medical Journal*, Oct. 20th, 1894.

TREATMENT OF DELIRIUM TREMENS.—In the *New York Medical Journal* for July 21st, 1894, Bellamy concludes an article as follows:—1. Delirium was controlled with greater rapidity and safety by trional than by other hypnotics. 2. In the majority of cases a marked stimulant effect was observed, possibly on account of the methylic and ethylic elements which enter into the composition of the drug. 3. On account of the low temperature noted in all cases, trional must possess antipyretic properties, thereby simulating its allies of the phenol group. 4. It was always well borne by the stomach, and in one case was rapidly absorbed when administered per rectum. 5. No unpleasant after-effects were observed, and in all cases recovery was speedy, with the exception of two.—*The Therapeutic Gazette*, Oct. 15th, 1894.

DIURETIN.—Panowski (*Zeitsch. f. klin. Med.*, vol. xxiv., 3 and 4, 1894) has investigated the action of diuretin with the view of determining whether the renal activity was intensified, or whether the vasomotor system became affected. Fifty cases were submitted to most careful investigation, with the following results:—A tonic action is exerted on the cardiac muscle, the area of cardiac dulness diminishing even before any improvement of the œdema has become noticeable. In this respect it resembles caffeine, but cannot compete with digitalis. In the vessels a considerable increase of pressure is noticeable, and is regarded by the author as attributable to a stimulation of the nerve centre. The diuresis is very marked, but, in the author's opinion, is the result of the increased pressure in the vasomotor system. He recommends it as a diuretic in valvular lesions after digitalis has failed, when the effects of diuretin may be surprising. Of greater importance is its action in affections of the cardiac muscle, where he had seen remarkable results after digitalis, camphor, and caffeine had given no relief. In renal affections the good effects were not so marked, but diuretin is held by the author to be preferable to digitalis when there is slowness of the pulse as a forerunner of uræmia. In the other œdematous conditions it is not to be recommended. The drug is best given in powders of 15 grains, four to six times daily, or can be given in solution, when the effects will be first noticeable between the second and sixth day.—*British Medical Journal*, Nov. 3rd, 1894.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

VARICOSE LYMPHANGIECTASIA. — Cases of lymphangioma are uncommon, and it is rare also to meet with instances of lymphatic capillary varices, therefore one recorded by Elliot is interesting. On the neck, sternum, and margin of the axillæ of a woman aged 39, who in childhood had suffered severely from suppurating adenitis, which had left extensive and in parts puckered scars, there were formed at the edges of these, groups and chains of vesicular discrete efflorescences. The greater number of these were about the size of a pinhead, and not deeply seated. They were prominent, and rested on the surface like drops of yellow dew, being tense and not rupturing readily. On pressure they diminished in size, even disappearing altogether in the axilla, and refilling only slowly on removal of the pressure. No telangiectases were present, nor were there any subjective sensations. Should one rupture, a steady trickling of a pale straw-coloured fluid ensued, and continued for hours, or even days. Sections showed no change in the rete and no thickening of the corium, but slight cellular infiltration in the neighbourhood of the vesicles. There were unilocular though irregular cavities, seated both superficially and at various depths in the corium, lined with endothelium. They did not correspond to any of the varieties of lymphangioma described by Francis, and Elliot regards them as simple lymphangiectasiæ.—*Journal of Cutaneous and Genito-Urinary Diseases*, April 1894.

IMPETIGO CONTAGIOSA BULLOSA.—The opinion has been expressed that impetigo contagiosa is a form of abortive pemphigus, the condition referred to under the latter designation being hardly yet exactly defined. Elliot has related an exaggerated instance of what he considers an example of bullous impetigo contagiosa. A boy of eight, living under bad hygienic conditions, developed an eruption eight or ten days after having been vaccinated, the site of the vaccination being still unhealed, fungoid in appearance, and bathed in sero-purulent fluid. The eruption, which was extensively scattered over the body, had for its primary lesion a tense bulla of varying size—a pea to a filbert—which arose from apparently normal skin, and was not surrounded by any zone of redness. Its contents, at first clear, became at the end of a few hours somewhat cloudy but yet not purulent, and they would either be absorbed and a crust result or rupture take place. The walls of the bulla collapsed and were cast off, and a raw moist surface was exposed, rapidly becoming dry and crusted or scaly. In either case a broad red zone would then develop around the periphery of the lesion, and upon it a continuous bullous ring would arise, and a row of distinct and separate pea-sized bullæ. On this stage being reached involution and healing might occur, or a further evolution take place, and the same method of advance be pursued, involving a wider area of skin. Thus patches an inch or more in diameter were formed, somewhat resembling a brooch,—a central bulla surrounded by one or more circlets of discrete, or smaller, though closely-set ones. No scarring or pigmentation remained after the lesions had healed. The treatment which proved curative was entirely local, though his health was improved by suitable hygiene and tonics. A lotion of ichthyol, at first 3 per cent., later 6 per cent., in carron oil, was applied, and it was regularly observed that when the entire surface was covered with the dressings and bandages, that steady involution occurred, but when any part was left unprotected, so that the boy could reach it with his hands and scratch the surface, then new bullæ appeared on that part. Baths of 1 in 5000 of corrosive sublimate were given at a temperature of

101°, and after this he was dressed in such a manner as to occlude the whole body, and under this treatment the process steadily declined. Elliot compares the case with pemphigus vulgaris, acute pemphigus, erythema multiforme bullosum, varicella bullosa, dermatitis herpetiformis, and hydroa, and regards it as impetigo contagiosa in its bullous form. Such cases—less exaggerated—are not uncommon as a sequence of vaccination. They present contagious and auto-inoculable properties. And the local and external medication consists essentially in antisepsis, arsenic having little or no influence, as in pemphigus. The development is, there is much reason to believe, to be ascribed to parasitic organisms, though it must be confessed that a constant and unequivocal parasite has not yet been demonstrated as its definite cause in every case.—*Journal of Cutaneous and Genito-Urinary Diseases*, May 1894.

SCABIES AND ITS ACCIDENTAL COMPLICATIONS.—From an excellent article on this subject by Prof. Leloir of Lille we extract what follows:—It is a well-known fact that although the acarus never quits its abode in the skin neither by day nor night, unless in the case of young acari who go to seek a lodging elsewhere, or in that of acari displaced by scratching, nevertheless the acarus is more active by night than by day. This greater nocturnal activity of the acarus explains the nightly exasperation of pruritus in those affected with scabies. M. Aub, having placed an acarus on a black cloth, noticed that the animal remained immovable in the daytime, while at night it stirred about and tried to leave the place where it had been deposited. This proves that it is not solely the warmth of the bed which renders the acarus more active, but night-time. On the question of communicability it is well to remember that the acarus possesses great vitality, and that removed from the skin they may be alive after a sojourn of seven days in cold, of ten in warm water. Sulphur, petroleum, and turpentine kill them speedily. Of the subjective symptoms, the first to attract the attention of the patient and physician is, as a rule, the itching. This itchiness commonly manifests itself some weeks after contamination. As the acari multiply secondary itchy foci arise, and from these others, so that the pruritus becomes in some sort generalised, though there are always regions which are respected by scabies. Shortly after the appearance of the pruritus, there come out, apart from the eruption proper of scabies, due to the excavation of the epidermis by the acarus, pruriginous papules. Finally, the excoriations produced by the acari, by this pruriginous papulation, by the eczema, lichenification, and scratching, may be inoculated in turn by the agents of suppuration, so that a pyodermatitis is superadded, taking the form of pustules of ecthyma, of impetigo, follicular inflammation, etc. The furrow excavated by the female acarus in the thickness of the epidermis is the eruption proper of scabies. In some cases in the situation of the cul-de-sac in which the furrow ends there occurs a vesicle, essentially due to scabies, and which must not be confounded with that of eczema. Scabies may be abnormal in consequence of the excessive intensity of the objective phenomena, or, on the contrary, because these symptoms are so slightly marked. The latter is chiefly found among those who, by frequent ablutions and by the application of various substances to the skin, disturb the acari and interfere with their multiplication. Such cases may last a long time, since little inconvenience is experienced. There are also rare instances in which the pruritus is trivial, or entirely absent. It is doubtless difficult to explain how other forms of sensibility are preserved, and yet there is no impression of itching set up by the mechanical and chemical action of the acarus. Acari parasitic on other mammalia occasionally establish themselves on the human skin. Thus the acarus of the horse and cow sometimes affect those waiting on them. As a rule, the eruptions so occasioned disappear in the course of five or six weeks spontaneously. These mites, probably because they live habitually on a skin thickly covered with hair, do not burrow deeply on the human integument. Untreated, or mistakenly treated, scabies may continue indefinitely. Leloir has seen a husband and wife who had scabies for ten years. They had consulted—so they said—two dozen doctors, and had followed the treatment prescribed. "In these ten years," they observed, "it is incredible the quantity of arsenic, of iodide of potassium, of depuratives, of purgatives, we have swallowed; the number of baths we have taken, the amount of lotions and of salves we have applied. And what it has cost us, Monsieur le Docteur!!!" There are, Leloir remarks, countries where the children come into the world with scabies, and die affected by it. Though scabies is most frequently contracted directly, still there are cases in which it has been communicated by bed linen. During the Exhibition of 1889, Leloir was consulted by several persons who had undoubtedly contracted scabies in Parisian hotels of respectable appearance. The influx of strangers was so great, that in place of changing the bed linen it had simply been ironed over to impart the appearance of freshness.—*Journal des Maladies Cutanées et Syphilitiques*, July 1894.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P. Ed., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, and on Midwifery and Gynæcology, School of Medicine, Edinburgh.

TORSION OF A SUBPERITONEAL FIBROID.—Dr R. von Holst narrates a case in which the rare condition, torsion of a subserous uterine myoma, was present. The patient, a woman 32 years old, had had two confinements and one abortion, and her last pregnancy had been eight years previously. She had slight prolapsus and sharp abdominal pain, and vomiting came on suddenly; a tumour was felt in the abdomen to the right of the uterus, which was retroverted to the left side; and the diagnosis of torsion of the pedicle of a right-sided solid or partly solid ovarian tumour with slight peritonitis was made. Laparotomy was performed, when it was found that the tumour was a very vascular subserous myoma springing by a broad pedicle from the fundus uteri, and having undergone a twisting to the extent of 120 degrees, so that the right annexa lay forwards and to the left of the middle line. The tumour was shelled out and removed, and ventral fixation of the uterus performed, and the patient made a perfect recovery. The author points out the rarity of the occurrence and alludes to five other cases, including one reported by Dr Cappie at a meeting of the Edinburgh Obstetrical Society.—*Centralblatt für Gynäkologie*, No. 40, 1894.

PROLAPSUS UTERI IN A VIRGINAL NULLIPARA.—Dr M. Liebmann records an instance of prolapsus uteri et vaginæ in a virginal nullipara of only 17 years of age. Two years previously the patient noticed that something came down in the region of the genitals when she strained at stool or coughed. She consulted a midwife, who gave her a pessary with which to keep up the uterus. Later she came under the author's observation, who found her suffering from prolapsus uteri, and also from phthisis. On account of the latter condition and the severe cough no operation was performed, but a ring pessary was introduced, which for a time was successful.—*Centralblatt für Gynäkologie*, No. 41, 1894.

MASSAGE FOR HABITUAL ABORTION.—Dr Malengreau gives the details of two cases in which he successfully treated habitual premature expulsion of the uterine contents by means of massage. In the first the patient habitually aborted at three and a half months, notwithstanding treatment by curetting, etc. Uterine massage was recommended, and during its performance an indurated patch was found in the posterior wall of the uterus above the cervix. It was considered that this patch, by preventing the distention of the viscus beyond a certain point, determined the miscarriage. Under the treatment the induration passed away, and the patient afterwards conceived, and for the first time carried her infant to the full term. The second case was that of a woman who had twice had a premature labour. She was pregnant for the third time, and on vaginal examination it was found that the right broad ligament was contracted and the uterus bent to the side and back. Massage during pregnancy was recommended and carried out, and the patient was normally confined at the full term.—*Archives de Tocologie*, Sept. 1894.

PREGNANCY FOLLOWING VENTRAL FIXATION OF THE UTERUS.—Dr

Helena Goodwin, in a short paper, records a case in which pregnancy occurred in a woman who had had ventral fixation of the uterus performed as well as repair of the cervix and perineum. During pregnancy and labour (at full term) there was great pain in the left side, and a feeling of stretching in the site of the incision which had been made previously for the operation of ventral fixation. The after-pains were severe and long-continued. On the third day post-partum the temperature rose, and intra-uterine douching and packing with iodoform gauze were resorted to. She did not fully recover health, so about three months after delivery abdominal section was performed and the right tube and ovary removed. The uterus was found to be still firmly held to the anterior abdominal wall. Recovery was afterwards complete. The authoress concludes her paper with references to cases of labour after ventral fixation by Sänger, Klotz, Leopold, and others.—*American Journal of Obstetrics*, Sept. 1894.

OBSTETRICS AND GYNÆCOLOGY IN BAGDAD.—In an interesting paper Dr Sundberg gives an account of midwifery and gynæcology as practised in Bagdad. Details of such matters were difficult to obtain, on account of the strict privacy of home life among all classes. The rapid increase of the population under very adverse circumstances showed that the reproductive function was very active in Bagdad. The catamenia appear between the years of eleven and twelve, yet child-marriages at the age of nine or ten are common, and "to be a great-grandmother at the age of thirty-six is a privilege enjoyed by Bagdad ladies." The author had assisted at an operation for recto-vaginal fistula on a married child of eleven years,—the recto-vaginal septum had been almost wholly torn away in coitus! Among the desert Arabs labour is easy; but among the more refined city ladies, who recline day out and in on luxurious cushions, it is not less slow, tedious, painful, and fatal than among European and American women. From a native midwife the author learned that the parturient woman is sometimes examined, and then *with unwashed hands;* and that there are two head presentations, one for boys and the other for girls. The boy being modest, looks backwards to the perineum; the girl advances boldly face to the front. Exceptions to these last-named rules occurred, but were explained by the midwife, who said that some boys had no shame in them, and that a few girls were unnecessarily modest. The duration of labour was from one hour to twelve days. When the breech presented the child was always still-born. In shoulder cases the arm was amputated and postural treatment employed to change the presentation, but mother and child invariably died. In placental retention long braids of hair were pushed down the patient's throat to provoke retching, and downward pressure was made on the abdomen along with traction on the cord. Lemonade was given to control hæmorrhage. The perineum was often torn, and if the woman was strong enough it was sewed up at once. Ophthalmia neonatorum was common.—*The American Gynæcological and Obstetrical Journal*, Sept. 1894.

A CASE OF SYMPHYSIOTOMY.—Dr Gross, of San Francisco, reports a case of symphysiotomy in a ii.-para, 30 years old. The breech had come down, but the head remained resting over the brim of the pelvis, and the child was dead. Symphysiotomy was performed, the triangular ligament was divided, and the head easily extracted. The puerperium was uncomplicated, and the patient could empty her bladder on the tenth day. The conjugata vera was about 2¼ inches.—*Occidental Medical Times*, September 1894.

INFLAMMATION OF THE URETERS IN THE FEMALE.—Dr Mann contributes a paper on the above little-known disease. Amongst the causes of the disease he enumerates injuries during childbirth, previous disease of the bladder, gonorrhœa, suppuration of the pelvis of the kidney, abnormal conditions of the urine, and tuberculosis. The most constant symptom is frequent micturition; but there is also pain over the ureters, often mistaken for ovarian tenderness. A curious symptom which the author noted was an absolute distaste for water. Gastric and intestinal dyspepsia, depression of spirits, etc., have also been noted. Diagnosis is carried out by palpation of the ureters, which are easily felt when enlarged,—the author has used only the pelvic method and never the abdominal,—by examination of the urine, and by paying attention to the above-named symptoms. The prognosis depends entirely upon the stage which the disease has reached; if it has become chronic the outlook is not good, for abscesses will probably form in and around the kidney and lead to death. Various forms of constitutional treatment are spoken of, and the local measures are partly through the urine by means of the administration of sandal-wood oil, and partly direct by the catheterisation of the ureters, etc., by Howard Kelly's method.—*American Journal of the Medical Sciences*, Aug. 1894.

OCCASIONAL MEDICAL PERISCOPE.

By A. LOCKHART GILLESPIE, M.D., F.R.C.P.E.

LOBAR PNEUMONIA.—In a pamphlet recently sent me by Dr Russell M'Lean, M.D. Edin., the Medical Officer of Health, Zeoda, on epidemic pneumonia, he chronicles 35 cases of this disease which occurred in his district in the spring of 1893. He points out that with a great increase in the number of cases of lobar pneumonia the cases of bronchitis showed no such rise in their numbers, contrary to the usual result, mentioned by Dr Longstaffe in the *Investigation Records*, where he states that the two diseases occur more or less equally. Dr M'Lean specially mentions two instances to support his contention that the outbreak was largely communicable from one patient to another. He gives 15 out of the 35 as originated or complicated by influenza; it is doubtful, however, if he has not understated the influence of this disease. In the first volume of the *Edinburgh Hospital Reports* I have recorded 31 cases of lobar pneumonia occurring in the years 1891-92 in one ship, with nearly equal periods of time between the different cases or sets of cases; while in the second volume of the same Reports for 1892-93 I have chronicled a series of 39 similar cases from the same ship. In all these cases, as in those of Dr M'Lean, the symptoms were somewhat anomalous, the signs indefinite, the temperature high, the crisis early, and treatment of little efficacy. Influenza was epidemic during all the three series.

MASSAGE AND GYMNASTICS: ITS EFFECT ON THE BODILY METABOLISM OF HEALTHY PERSONS.—Bendix (*Zeitschrift für klin. Medicin*, Bd. xxv., Heft 3 and 4) found that the massage of a healthy man and woman caused an increase in the quantity of urine passed daily, up to 60 per cent. over the normal. The amount of nitrogen excreted was also raised by 10 per cent. The effects of the massage lasted for two to five days after its stoppage. The author attributes the increased flow of urine to the stimulation of the kidneys by the products pressed out by the muscles, and to the greater blood-pressure induced by it. The nitrogen of the fæces was not estimated. In a child of two years and a half the amount of urine increased by 19 per cent., the nitrogen by 15 per cent., while the fat passed in the fæces was diminished by one-third. The total excretion of nitrogen in urine and fæces was raised 18 per cent. Dr Bendix advises massage in chronic liver and kidney cases to facilitate the removal of fluid, and in children to encourage the absorption of fat.

FOR MUSCULAR NEURALGIA IN WOMEN.—Rabagliati has invented (*Med. Press and Circular*, 17th October 1894) two names for massage which we sincerely trust will never again be seen or heard of—Allo-piesto-myo-kinetics, or massage by another; and Auto-piesto-myo-kinetics, or massage by the sufferer. He prefers these proceedings to any local treatment for so-called ovarian neuralgia.

THE TREATMENT OF ENLARGED HEART BY CERTAIN MOVEMENTS.—Sir Philip C. Smyly (*Dublin Journal of Med. Science*, September 1894) speaks very favourably of the good effect produced by the movements advised by the Drs Schott of Bad Nauheim for use in the treatment of dilated heart. Oertel's method has been shown (Lichtheim and Sommerbrodt) to have been often followed not only by positive injury but even by death. The Schott system consists evidently in slight but regularly-planned gymnastics, combined with baths and massage. "Planlöse Bewegungen sind ein Herzschwächungs, planmässige Bewegungen dagegen ein Herzstärkungsmittel" (Schott). The exercises and the massage, but especially the first, increase the amount of blood in all the vessels of the body by increasing their calibre, thus rendering the heart less engorged and capable of receiving more blood. Sir

Philip gives the details of an instructive case at the end of his paper, in which the movements, undertaken without the baths, enabled the patient to be sent to Nauheim, where the two combined removed the fluid present both in the abdomen and in the pleural cavity, and in which massage alone had little or no effect. (Other papers on this subject may be found as under:—Schott, *Berlin. klinisch. Wochenschrift*, 1891, No. 18; Symons Eccles, *Practitioner*, August 1894; Babcock, *Mississippi Valley Med. Assoc.*, October 1893; and W. Bezly Thorn, in the *Lancet.*)

SO-CALLED AMYOTROPHIC LATERAL SCLEROSIS.—Senator, in the *Deutsche Med. Wochenschrift*, No. 20, 1894, supports Leyden's contention that the symptoms ascribed by Charcot to sclerosis of the lateral columns in the clinical picture called amyotrophic lateral sclerosis are merely incidental and not due to an affection of any well-defined column of the spinal cord. A post-mortem examination made on a case, with typical symptoms, revealed great atrophy of the ganglion cells of the anterior horns in the cervical and dorsal regions, much congestion of the spinal cord, areas of softening in the grey matter, but no sclerosis of the white substance. The case was therefore not one of amyotrophic lateral sclerosis. Wolff (*Zeitschrift für klin. Medicin*, Bd. xxv., Heft 3 and 4), referring to the case reported above, remarks that it occupies a position between the so-called amyotrophic lateral sclerosis, progressive muscular atrophy, and spastic spinal paralysis. The best name for it would be spastic atrophic paralysis.

FRIEDREICH'S ATAXIA ("Über die Friedreich'sche Krankheit und ähnliche Krankheitsformen nebst Bemerkungen über nystagmusartige Zuckungen bei Gesunden," tr. Schultze, *Deutsche Zeitschrift für Nervenheilkunde*, Bd. v., Heft 1; *Klinische Beiträge zur Kenntniss der Friedreich'schen Krankheit* (*hereditäri. resp. juvenile*) *Ataxie*, Besold. Dieselle, Bd. v., Heft 2 and 3). Schultze argues against Senator's hypothesis that Friedreich's ataxia depends on an atrophy of the cerebellum, not on a systematic lesion of some of the nerve tracts in the medulla. Senator's case was atypical, while of the many cases described by Mendel, only in one was the affection of the medulla complicated by a cerebellar atrophy, probably quite exceptional an occurrence. He gives clinical notes of three cases in one family. The disease in each presented a typical appearance. It began in each case about puberty. The symptoms gradually became worse,—ataxy, staggering gait, skoliosis, absence of patellar reflex, while later disturbance of speech and nystagmus-like movements appeared. Sensibility and the organic reflexes were retained for long. The nystagmus was pronounced in one case only. In considering the morbid anatomy of this disease, Schultze states that he has found degeneration of the direct pyramidal tracts in the lower dorsal and lumbar regions, while in the higher regions of the cord the cerebellar tracts were also involved. Corpora amylacea were also observed, and thickening of the walls of the vessels, especially those of the posterior columns. Besold gives a careful note of four cases of this disease. He found some points of difference between them and the description of the disease as laid down by Friedreich. His cases presented failure of patellar reflex, normal reaction of pupil, slight disturbance of speech, incoördination of the muscles of the anus, and especially of the trunk, some disturbance of sensibility and affection of the organic reflexes of the lumbar region. He also noticed the presence of the usual hyperextension of the toes, which he ascribes to over-action of the extensors in the patient's endeavour to balance himself. The period of commencement varied much more than usual, not being invariably at puberty. Among the secondary results of the ataxia he classes also a kyphosis of the vertebral column in the dorsal region.

PERISCOPE OF SYPHILIS AND GENITO-URINARY DISEASES.

By Francis Cadell, F.R.C.S. Ed.

The Woman in Scarlet.—In a leader in the *Medical and Surgical Reporter*, July 23rd, 1894, the subject of the State control of prostitution is discussed. It says that the Board of Public Safety of Louisville, Kentucky, ignoring all past experience, desires to try its hand at moderating the evil by lessening and regulating prostitution. Doubt is expressed whether the people in Louisville can thus be reconciled to giving legal sanction to immorality, especially as the whole plan is based on a conceded failure. The system had a four years' trial in St Louis, Mo., but proved such a colossal failure that it was gladly abandoned; and, again, on a smaller scale in Cleveland, with the usual result of increasing the evil sought to be diminished. In England the system was abandoned as a failure after a most careful study of the subject in all its phases. On the Continent the plan is still nominally in force, but indications are that it is on the point of being abandoned there likewise. The article goes on to show how impossible it is to lessen the amount of venereal disease by legislative interference with one sex alone, and concludes by making the following suggestions:—At frequent, irregular intervals, make unexpected raids upon the disorderly houses. Place in custody all males found therein without fear or favour. It is unnecessary to molest the females, who are supposed to be already under public supervision. Having arrested the male prostitutes, inflict such penalties in the way of fine or imprisonment as may be deemed desirable, or dismiss them with a warning; but under no circumstances whatsoever should they be discharged until they have been photographed in addition to the ordinary memoranda of identity. Next in importance to securing the photograph would be the compulsory submission to a thorough medical examination. Should no evidence of disease be observed, discharge the prostitute with strict injunctions to present himself in person for medical examination at suitable intervals until the known period of incubation, starting from the date of arrest, shall have passed. There will be no trouble about these subsequent examinations when the prostitute learns that a failure to undergo them would entail the exposure of his photograph as a warning to the public that the original is to be regarded as a possible source of infection, and, therefore, a menace to the community. If at the end of his period of observation the individual is found free from infection, his photograph and all memoranda obtained by the health authorities may be returned to him without any violation of privacy. Should the prostitute at the first examination display evidence of disease, he should be subjected to quarantine measures of more or less severity. In mild cases, perhaps, the display of his photograph in the offices of the Health Department and in the various disorderly houses would be sufficient. At any rate, some such method would afford prostitutes of the other sex efficient protection by enabling them to immediately identify probable carriers of contagion. The key to the whole business lies in the photograph and its skilful manipulation. It must be understood that we are suggesting measures that would prove effective from the standpoint of public health alone. We do not pretend to say what effect such methods would have other than as sanitary precautions. The effect of putting some such scheme into operation can be better imagined than described; but we venture to say that three such raids made effectively, and the quarantine measures enforced without fear or favour, would settle the question of *public* prostitution in any city in America. This plan is barely suggested, but it opens up possibilities for the effective treatment of the social evil that are not contemplated in any of the measures that seek to conserve the public health by supervising a small fraction of the individuals afflicted with the disease. Make the measures rational, or cease prating about the sanitary necessity of regulating prostitution.

THE INFECTING FEMALE.—In the *American Practitioner and News*, June 30th, 1894, Dr E. R. Palmer has a paper, under this title, on the State inspection of prostitutes. He begins his remarks with this extract from *Modern Medicine*:—"There is probably no country in which the province of the so-called Contagious Diseases Act, which relates especially to the inspection of prostitutes, has been so thoroughly carried out as in Germany; nevertheless the Commission appointed by the Society of Medicine of Berlin, with Prof. Virchow as President, recently reported, as the result of an investigation, that both prostitution and venereal diseases were found to be rapidly increasing in Berlin. For example, the number of regular prostitutes, recognised as such by the police, was, in 1886, 3006. The number had increased in 1891 to 4364, an increase of almost fifty per cent. This represents, however, but a small proportion of the women actually engaged in prostitution, as 16,000 women are annually arrested for plying their vocation upon the streets in Berlin, and it is known that a great number of women live lives of prostitution clandestinely; so the Committee estimates the total number of prostitutes in Berlin at 40,000 or 50,000. Some idea of the number of persons who are annually infected by venereal diseases may be gained from the fact that the committee reported nearly 80,000 cases as having been treated at two hospitals alone in Berlin between 1880 and 1889. The fact was also mentioned by the Committee that a great number of cases were doubtless not included in this category. They quote the estimate of Blaschko, that one in every nine or ten of the male population of Berlin has been infected with syphilis. A most convincing evidence of the utter inefficiency of the inspection service in preventing the spread of venereal diseases was shown by the fact developed by the Committee, that the naked-eye inspection, which has been universally relied upon, detects less than one in five of the cases of gonorrhœa, to say nothing of syphilis. By making a bacteriological examination of each case the proportion of prostitutes found to be suffering from gonorrhœa was increased from nine per cent. to fifty per cent." From the standpoint of gonorrhœa he answers the question of what constitutes an infecting female thus:—First, one who is herself the victim of an active specific inflammation of the urethra, uterus, vulva, vagina, or vulvo-vaginal glands. Second, one with a chronic gleety discharge from one or more of these tracts, persisting after all active inflammatory symptoms have subsided, including most cases in which the infecting secretion is confined in its production to the exterior of the cervix and the cervico-vaginal fold. Third, one suffering from specific disease of the deeper parts, often chronic, and, excepting where the tubes are involved, ordinarily painless. Of these the endocervicitis phase is the commonest and most dangerous, because of the almost certainty of the extrusion of the infectious matter during the sexual act, while infecting material from the cavity of the womb proper or from the tubes nearly always needs the aid of the menstrual flux to bring it into the vagina; and, fourth, that doubtful class of cases of women who have seemingly to me with absolute certainty never been infected, and yet who, with purulent vaginæ or deeper organs, set up in the male a discharge that bears all the clinical features of a typical clap, and is in turn transmissible. Of the first group it is hardly necessary to speak. Ordinary experience in vaginal examination and its application to the case is all that is needed. Of the second, clinical history is necessary, it being almost, if not quite, impossible to differentiate by appearances simply between such discharge and an innocuous leucorrhœa, the gonococcus not being pathognomonically reliable. The third class is the one to which I would chiefly call attention—chronic gonorrhœa of the cervix, cavity, or tubes. Here even the most careful examination frequently fails to show any evidences whatever of disease. Sometimes the firm pressure of the cervix between the blades of a bivalve speculum will extrude a muco-purulent fluid; but often, in women that are demonstrably sources of contagion, a fixed and sensitive womb, or tubular and ovarian tenderness, and possibly enlargement, or the history of menstrual colic, are the only indices obtainable, and frequently these even are absolutely absent. Who then shall, in the face of these facts, declare an accused woman, especially a public woman, to be free of infectiousness? With any of the symptoms just detailed, and a history of prostitution even where a previous gonorrhœa is vehemently denied, I for one cannot pronounce the woman safe.

THE MILD CHARACTER AND THE DIMINISHED PREVALENCE OF SYPHILIS, AND THE INFREQUENCY OF VISCERAL SYPHILIS.—In the *Medical News*, Aug. 11th, 1894, Dr J. H. Musser arrives at this conclusion:—"In the Philadelphia Hospital, the only institution in Philadelphia in which early syphilis is treated, there has been a progressive diminution in the number of cases of syphilis, notwithstanding the increase in the population of the community, and despite the fact that the statistics were begun just after the war, at a time rife with such diseases. Syphilis is at present a mild disease. Tertiary manifestations are not common. Visceral syphilis is rare."

RAPID DILATATION IN URETHRAL STRICTURE.—Morotti deals with this subject in a paper reprinted from the *Proceedings* of the Lombard Medical Society of Milan. His method is to introduce a filiform guide through the stricture, to which he immediately adds a No. 29 (Bazy = 14 Charrière scale) rigid metallic olivary sound, and at the same sitting passes a No. 31. The next day he repeats No. 31, and passes Nos. 34, 35, and 36, if there is much resistance, up to No. 39. This is followed by the usual treatment by gradual progressive dilatation with metallic instruments. By this combination of methods Morotti got results more satisfactory than his best expectations, so that since he has never had recourse to urethrotomy except for very old or very narrow strictures. The time taken in the rapid dilatation varied from eight to twelve days. The cases most suitable are those due to chronic gonorrhœal processes, superficial ulceration, slight traumatic lesions, and those strictures not very old and only moderately resistant.—*British Medical Journal*, Nov. 3rd, 1894.

Part Fifth.

MEDICAL NEWS.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The Quarterly Examinations for the Triple Qualification took place in Edinburgh during October, with the following results:—

First Examination.—Four Years' Course—Of 28 Candidates, the following 12 passed:—Joseph Thorp Waite, Halifax; Alfred Knowles Ludlam, Chesterfield; James George Mylan, India; Kaval Vittal Rau, India; Bartholomew Connolly, County Cork; Thomas Halliday Lang Guthrie, Ayr; John Elliott, Shettleston; Abraham George Sutton, Cork; Ann Helen Greenwood, Rochdale; Alexander Warren Buttry Anderson, Airdrie; Angelo Sainz Trapaga, Mexico; and William M'Harry, Belfast. Three Candidates entered for divisions, and 2 passed. *Five Years' Course.*—Of 28 Candidates the following 8 passed:—Henry Stewart Anderson, County Antrim; John Tobin, County Cork; Georgina Collier, Lisburn; Alexander Mein Hardie (with distinction), Edinburgh; Ernest Leon Maunsel Hackett, Cork; William John Morgan, Wales; Paul Johannes van Coller, Cape Colony; and Abraham Johannes Benjamin Albertyn, Cape Colony. Fifteen Candidates entered for divisions, and 9 passed.

Second Examination.—Four Years' Course—Of 61 Candidates, the following 32 passed:—Edward Regan, County Derry; Gilbert Hetherington, Appleby; Arnold Theodore Clarke, Jamaica;

Alfred Knowles Ludlam, Chesterfield; Andrew James M'Farlane, Glencoppagh; Joseph Thorp Waite, Halifax; Leonard Roscoe Steele, Australia; John Collingwood Thompson, Durham; George Henderson, Coatbridge; Robert Wilbond, Woolwich; Howard Edward Fellowes, Birmingham; Mark O'Brien, County Cork; Robert Alleyn Bowen, County Kerry; Duncan Ritchie, Greenock; Jacob Henry Abrahams, Jamaica; Hugh Hunter Lawrence, Durham; Ernest Edward Scott Joseph Galbraith, Cork; Angelo Sainz Trapaga, Mexico; Joseph O'Meara, County Limerick; Albert Ernest Blades, Sheffield; Timothy O'Callaghan, Ireland; William Austin Mushé, Paris; James Law Brownridge, Paisley; Edward Joseph Howley, Newfoundland; Gulab Singh, India; William Henry Rowthorn, Nottingham; Alexander M'Lellan Wilson, Glasgow; Thomas James Chidley, Dublin; Tom Duff, Edinburgh; Charles Scott-Wilkinson, Shaftesbury; John Joseph Uniacke, Cork; and George Patrick O'Connor, Cambridge. Fourteen candidates entered for divisions, and 5 passed. *Five Years' Course*—Of 8 candidates, the following 6 passed:—Eugene Ryan, County Cork; Georgina Collier, Lisburn; Flora Rosina Cartwright Wood, Portobello; James M'Glynn, Tyrone; Selina FitzHerbert Fox, Blackheath; and Andrew Gairn, Edinburgh.

***Final Examination.*—Of 123 Candidates, the following 61 passed and were admitted L.R.C.P.E., L.R.C.S.E., and L.F.P.& S.G.:—George Percy Parker Clapham, Liverpool; Charles O'Connor Parsons, Liverpool; George Frederick Noel Taylor, India; Robert Alexander Edwards Lowry, Londonderry; Michael Joseph Halton, Mullingar; Isabella Beattie Venters, Blairgowrie; Amy Gordon Lillingston, New South Wales; Sidney Wood, Rochdale; Joseph Tibbetts, Staffordshire; John Prichard, Carnarvon; John Berkley Stewart, County Londonderry; Edward James McCarthy Morris, County Cork; James Dore Liston, Limerick; William Hoyes Jamieson, Montreal; Albert Edward Downey, Glasgow; Ethel Bentham, London; Jessie Ballard Ferguson, India; William Rosetherne Thompson, Australia; Stanley Bertram Siddall, Liverpool; Claudianus Josephus da Cunha, India; Pilgaokar Purshottam Ramchundra, Bombay; Ursula Mary Dewes Fowler, Pendlebury; George Thomas Humphrey de Clive-Lowe, Bangalore; Arthur Desborough Clark, Ceylon; John Sides Davies MacCormac, Banbridge; John Sutherland Matheson, Ontario; William James Lewis, Wales; Robert Stewart Dowd, Quebec; Joseph Albert Blayney, Lancashire; William Bratton, County Tyrone; Thomas Shanasy, Adelaide; David Alexander Anderson, Ireland; William Joseph Collins, Clonmel; Charles Arthur Wilkinson, Halifax; Nugent Brander Baker, London; Osborne Johnson, Bassingham; Thomas James Chidley, Dublin; Walter John Stephen Clucas, Isle of Man; Thomas Bishop, Sierra Leone; Robert Valentine, Kincardine; Thomas Burton Macadam Sherwen, Whitehaven; Beatrice Ritchie, Perth; George Innes, Rothesay; William George Rainer, Victoria; George William Baker, Kettering; Tirumangalath Canjaraden Krishna Kurup, Madras; William Davis, London; Charles Joseph Adams Coates, County Cork; Edalji Jamshedji Treasuryvala, Bombay; Thomas Parker Powell, Breconshire; Albert Ernest Marwood, Portsmouth; Samuel Johnson, Manchester; John Hunter, Glasgow; Alfred Jebb Nevett, Shrewsbury; Edward M'Clure Campbell, County Antrim; Malcolm Stewart, Ayrshire; William Shakespeare Robinson, King's Norton; John Hutchinson Garner Howe, County Down; John Moorhead, Simla; George Wilkinson Crookes, Derbyshire; and William Macdonald, Inverness. Twenty-two Candidates entered for divisions, and 17 passed.**

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following Gentlemen, having passed the requisite Examination, were admitted Fellows of the College since last publication:—George Stokes Hatton, M.R.C.S. Eng., Newcastle, Staffordshire; Edward Buxton, M.R.C.S. Eng., Great Crosby, Liverpool; John Wheeler Dowden, M.B., C.M., L.R.C.S.E., 52 Morningside Road, Edinburgh; William Bain, L.R.C.S.E., Stoneleigh, Heaton Chapel, Manchester; Hugh Lathrop Murray, L.R.C.S.E., Melbourne; George Haynes Hetherington, M.R.C.S. Eng., Ipswich, Suffolk; Thomas Bedford Richardson, L.R.C.S.E., 33 Upper Bedford Place, Russell Square, London, W.C.; Richard Arthur Newton, M.R.C.S. Eng., 92 Newhall Street, Birmingham; and Ernest Edmund Maddox, M.D., M.B., C.M., 20 Alva Street, Edinburgh.

ROYAL MEDICAL SOCIETY.—The following office-bearers have been elected for Session 1894-95.—*Presidents*—John Orr, M.B., C.M., M.R.C.P. Ed., M.R.C.S. Eng.; J. Purves Stewart, M.A., M.B., M.R.C.S., L.R.C.P. Eng.; C. C. Easterbrook, M.A., M.B., C.M.; Jas. G. Cattanach, M.B., C.M. *Secretaries*—W. Macrae Taylor, Kenneth MacLean. *Chairman of Finance Committee*—John Henderson, M.B., C.M. *Curator of Library*—H. J. F. Simson. *Curator of Museum*—Angus Macdonald. *Chairman of Public Business Committee*—Fred. W. Mackay, M.B., C.M. *Editor of Transactions*—W. A. J. Alexander, M.A., M.B., C.M. *Treasurer*—J. R. Young. *Sub-Librarian*—A. P. Ormiston.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—Office-bearers for ensuing Session:—*Hon. President*, Robert Barnes, M.D.; *President*, G. A. Turner, M.D.; *Senior Vice-President*, Robert Kirk, M.D.; *Junior Vice-President*, Malcolm Black, M.D.; *Secretary*, J. Nigel Stark, M.B.; *Treasurer*, A. Miller, L.R.C.P.S.; *Reporting Secretary*, Robert Jardine, M.D.; *Pathologist*, John Lindsay, M.D.; *Council*, D. N. Knox, M.D., A. Richmond, M.D., Wm. Cullen, M.B., J. K. Kelly, M.D., A. R. Gunn, M.B., T. W. Jenkins, M.B.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS PHILADELPHIA.—The College of Physicians of Philadelpl announces that the next award of the Alvarenga Prize, being t income for one year of the bequest of the late Senor Alvaren and amounting to about 180 dollars, will be made on July 1895, provided that an essay deemed by the Committee of Awa to be worthy of the prize shall have been offered. Essays intend for competition may be upon any subject in medicine, but cann have been published, and must be received by the Secretary of tl College, Charles W. Dulles, on or before May 1, 1895. Eac essay must be sent without signature, but must be plainly marke with a motto and be accompanied by a sealed envelope having o its outside the motto of the paper, and within it the name an address of the author. It is a condition of competition that th successful essay or a copy of it shall remain in possession of th College; other essays will be returned upon application withi three months after the award. The Alvarenga Prize for 1894 ha been awarded to Dr G. E. de Schneinitz, of Philadelphia, for hi essay entitled "Toxic Amblyopias."

CONGRÈS FRANÇAIS DE CHIRURGIE.—Dans sa séance du 2 Octobre 1894, le Conseil d'administration a nommé à l'unanimit vice-président du conseil M. le professeur Guyon, de l'*Institut.* Dans cette même séance, le Conseil a décidé que le *prochain* Congrès, fixé au mois d'Octobre 1895 par l'Assemblée *générale,* commencerait le 3^{e} lundi de ce mois. Dans sa séance du 7 Novembre, le Conseil a mis à l'ordre du jour du prochain Congrè les deux questions suivantes. 1° Chirurgie du poumon (la plèvr exceptée); 2° De l'intervention opératoire précoce ou tardive dan les solutions de continuité des os (le crâne excepté).

WE have received from Messrs Burroughs, Wellcome, & Co London, specimens of the following tabloids:—1. Tabloids of Compressed Bismuth Salicylate, each containing 5 grains; 2. Tabloids o Ferri Quinine et Strychninæ Phosph., each tabloid containing tl equivalent of 1 drachm of "Easton's Syrup;" 3. Tabloids o Pepsin, Bismuth, and Charcoal, each containing 1 grain of Pepsi and 2 grains of each of the other ingredients. These are valuabl preparations, and ought to be much used in the treatment disease. We would especially commend the Easton Syru Tabloids on account of the taste of the syrup, and especially of it tendency to decompose.

DIAPHTHERIN.—We have also received from the same firm a specimen of this new antiseptic. It is a substance said to consist of two molecules of ortho-oxychinoline, one molecule of carbolic acid and one of sulphuric acid, and has the formula $C_{24}H_{22}SN_2O_7$. I is a sulphur-yellow powder of a peculiar but slight odour, and i soluble in equal parts of water. It is an excellent disinfectant. and possesses neither the caustic nor poisonous action of carboli acid. It is likely to take a foremost place among antiseptics.

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